

TRAVELS,

During the Years 1787, 1788, and 1789.

Undertaken more particularly with a View of ascertaining

THE CULTIVATION, WEALTH, RESOURCES,

AND

NATIONAL PROSPERITY

OF THE

KINGDOM OF FRANCE.

THE SECOND EDITION.

VOL. II.

THE TRAVELLER

BY J. H. STUBBS

WITH A HISTORY OF THE

TRAVELLING IN THE NINETEENTH CENTURY



NATIONAL ANTHROPOLOGICAL

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By ARTHUR YOUNG, Esq. F.R.S.

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BURY ST. EDMUND'S:

PRINTED BY J. RACKHAM, FOR W. RICHARDSON, ROYAL-EXCHANGE, LONDON.

1794.

T R A V E L S, &c.

C H A P. X.

Vines.

THE number of notes I took, in most of the provinces of the kingdom, relative to the culture of vineyards, was not inconsiderable; but the difficulty of reducing the infinite variety of French measures, of land and liquids, to a common standard, added to an unavoidable uncertainty in the information itself, renders this the most perplexing inquiry that can be conceived. It was an object to ascertain the value given to the soil by this culture; the amount of the annual produce; and the degree of profit attending it; inquiries not undeserving the attention even of politicians, as the chief interests of a country depend, in some measure, on such points being well understood. Now there is scarcely any product so variable as that of wine. Corn lands and meadow have their bad and their good years, but they always yield something, and the average produce is rarely far removed from that of any particular year. With vines the difference is enormous; this year they yield nothing; in another, perhaps, casks are wanted to contain the exuberant produce of the vintage; now the price is extravagantly high; and again so low, as to menace with poverty all who are concerned in it. Under such variations, the ideas even of proprietors, who live by the culture, are not often correct, in relation to the *medium* of any circumstance: nor is it always easy to bring individuals to regard rather the average of a district, than the particular one of their own fields. In many cases it is more satisfactory to rely on particular experience, when it appears tolerably exact, than to demand ideas, so often vague of what is not immediately within the practice of the man who speaks. These difficulties have occurred so often, and in so many shapes, that the reader can hardly imagine the labour which it repeatedly cost

me to gain that approximation to accuracy, which I was fortunate enough sometimes to attain. But, after all the inquiries I have made, with attention and industry, I do not presume to insert here an abstract of my notes as intelligence that can be *entirely* relied on: I am satisfied, that it is impossible to procure such, without application, time, and exertions, which are not at the command of many travellers. Contenting myself, therefore, with the probability of being free from gross errors, and with the hope of giving some information on the subject, not to be found in other books, I venture to submit the following extract to the public eye, though it be a result inadequate to the labour, variety and expected success of my inquiries. It is necessary farther to premise, that the reader must not contrast the circumstance of one place with those of another, under the idea that a considerable difference is any proof of error in the account. The price of an arpent is sometimes out of proportion to the produce, and the profit at other times unaccounted for by either:—this depends on demand, competition, the division of properties, the higher or lower ratio of expence, and on various other circumstances, which, to explain fully in each article, would be to enlarge this single chapter into a volume; I touch on it here, merely to guard against conclusions, which are to be made with caution. The towns named in the following table, are the places where I procured intelligence.—None are inserted in which I did not make the inquiry, as I was at every place mentioned in the margin.

The rents of vines are named but at few places; for they are very rarely in any other hands than those of the proprietor; even where rent is named, there is not one acre in an hundred let.

The price of the product is every where that of the same autumn as the vintage: those who can afford to keep their wine have much greater profits: but as that is a species of merchandize as much in the power of a dealer as of a planter, it ought not to be the guide in such accounts as these.

ISLE OF FRANCE.—*Arpajon*.—Rent of some to 80 liv.; in common 25 liv. Expences in labour, exclusive of vintage, 60 liv. (2l. 10s. 9d. per English acre). Produce, 6 pieces, of 80 pints, each $1\frac{1}{2}$ bottle.

Estampes.—Measure 80 perch, of 22 feet. Produce, 10 to 22 pieces. Rent to 90 liv. Labour, 60 liv. (2l. 13s. 9d. per English acre), vintage excluded.

Orleans.—Price in the town 150 liv. the piece, of 240 bottles, and retail 6 to 10s. the pint, of $1\frac{1}{2}$ bottle. Rent, 45 liv. Labour, 40 liv. vintage excluded (1l. 13s. 9d. per English acre.) Arpent of 40,000 feet.

S. of ditto.—Measure 100 perch, of 20 feet. Produce, 7 pieces, and in a good year 12. Rent, 36 liv. Labour, 40 liv. (1l. 13s. 10d. per English acre).

SOLOGNE.—*Verson*.—Rent in common, 35 to 50 liv. of the best 60 liv. the sétérée. Produce, 10 to 12 pieces, and to 22. Account here,

Rent,

Rent, -	60 liv.	
Tailles, about	12	
Vingtieme,	5	
Labour, -	40	
Props, -	6	10s.
Vintage,	33	
	<u>156</u>	<u>10</u>

Produce, 11 pieces, at	
20 liv.	220 liv.
Expences,	<u>156</u>
Profit, -	<u>64</u>

Price, 220 liv. (9l. 6s. 4d. per English acre.)

They renew some of the vines every year, by laying down shoots, called generally *provins*, but here *fausses*, five hundred per annum, at 50s. the hundred. They manure to the amount of thirteen small cart loads, not reckoned in the above account. Twenty people necessary for gathering an arpent, at 12s. a day, and food. Vines are sometimes much damaged by frosts in the spring.

BERRY.—*Vatan*.—No props; give four hoeings. *Fausse* 1 liv. 15s. the hundred. Rarely let. Produce, 3 pieces per *sétéree*, some 6 or 8; price now 24 liv. Rent, 60 liv. Produce, 168 liv. (6l. 13s. 10d. per English acre.) To plant a *sétéree*, for setting only, 45 liv. to 48 liv.; for two years produces nothing; the third a little. All agree it is the most profitable husbandry, if one be not obliged to sell in the vintage, for want of capital to keep the wine.

Chateauroux.—Very few let. Earth them four times. Produce, 3 poinçons, or pieces, a *sestere*. Rent, 60 liv.

Argenton.—Produce 5 or 6 pieces the *sétéree*, each piece 160 bottles. Planted about 2 feet 6 inches square. Use props of quartered oak.

QUERCY.—*Brive*.—A journal one-fourth of a *sétéree*, 0,4132 (*Paulon*.) In a good year produce 2 muids, of 242 pints of 2 bottles, but not general. Price, 3 to 6s. the pint. Labour, 15 liv. vintage excluded.

Pont de Rodez.—The plants at 4 feet square; very old and large. Every where quite clean, and in fine order, worked four times. Price, 6 liv. for 96 Paris pints. Cartona about half an acre.

Pellecoy.—Pais vineyards, of which there are many so steep, that it is strange how men can stand at their work. One-third of the country under vines, which are planted on absolute rocks, but calcareous.

Cabors.—Nineteen-twentieths under vines; in regular rows, at 4 feet; many more than two hundred years old. The true *vin de Cabors*, which has a great reputation, is the product of a range of rocky vineyards, that are upon hills hanging to the south, and is called *grave* wine, because of the stoney soil. Much subject to storms of hail. Measure the *sétéree*, not quite an arpent. Produce, 4 barriques, each 210 common bottles. Price, 50 liv.; sometimes at 20 or 30 liv.; and if two or three plentiful years together, the price of the wine does not exceed the cask; last year 12 liv.; 50 liv. the barrique, is 3 liv. the dozen.

dozen. Price, 800 liv. the measure (33l. 18s. 1d. per English acre); some at at 150 liv. (6l. 6s. 10d.); also at 300 liv. (12l. 13s. 8d.) Labour, exclusive of vintage, 30 liv. (1l. 5s. 4d.) Their wines all bear the sea well. The inhabitants and proprietors have little to do in the wine trade; dealers buy up for the merchants at Bordeaux, who mix these wines with their own thin bodied ones, and sell them for claret to the English, Dutch, &c. They make much brandy: five barriques make one of brandy. I drank this wine of three and ten years old; the latter 30s. the bottle, and both excellent. I imported a barrique, three years old, at 100 liv. prime cost and charges; and it cost me into my cellar in Suffolk 15l. more in freight, duty, carriage, and charges of all sorts. Mons. Andoury, aubergiste at the *Trois Rois*, with whom I settled a correspondence, might send me good wine; but not putting it into a double barrel, which he promised, it came to me much too weak; for the *vin de Cahors* is full bodied as port, but much better. A barrique I had also of another sort of wine, from the Chev. de Cheyron, near Leyborne; and, for want of being cased, it turned out such poor stuff, that it is hardly good enough for vinegar. Without double casing (and with it, for what I know) wines, *on a private account*, are tapped, and filled up with water.

Ventillac.—See them, for the first time in going south, ploughing between the rows of vines, at 5 feet and $5\frac{1}{2}$ feet asunder.

Noé.—Ox-hoeing the vines on a plain; each ox walks on an interval, with a row between them; and yoked with a sliding yoke, to vary the distance from ox to ox. Many young plantations of vines.

ROUSILLON.—*Pia*.—Vineyards not reckoned profitable, on land that will do well for other products: a minatre (1200 cannes, about 40,000 feet), from five to ten charges, each 128 bottles, or pints of Paris. Good wine, of last vintage, 6 liv. to 10 liv. the charge; but old at 72 liv.

Sejean.—The charge contains 60 pots, and weighs 360 lb.; five charges the muid, and the muid four tonneaux of Bourdeaux; price 10 liv. or 12 liv. the charge; freight from Cette to Dunkirk, 50 liv. 10s. the ton, and 20s. gratification; duty on export 7 liv.

Beziers.—Vineyards planted by Abbé Rozier, four feet four inches, by three feet ten inches, but not regular; set in a deep fosse, and covered with flints only.

Méze.—New vineyards planted in all parts. A *fétéree*, in a common year, gives two muids, or four tonneaux; 576 pots to the muid, or 768 bottles, each a Paris pint. Four tonneaux of wine, give one quintal of brandy, which sells, at present, at 12 liv. 12s. the quintal. Produce in money 96 liv. (8l. per English acre), labour exclusive; vintage 15 liv. (1l. 6s. per English acre). Examined a vineyard, planted 1250 plants per *fétéree*; they were four feet nine inches one way,

way, by four feet six inches the other; each plant therefore occupied $21\frac{54}{144}$ feet square: rejecting the fraction, there would be 2073 in an English acre; thus the *fétéree* is something better than half an acre. They are worked twice a year by hand; the expence 15 liv. the *fétéree*: the cuttings pay the expence of taking. Taille 30*s*. and making the wine 20*s*. the muid; common price of the wine 24 liv. the tonneaux.

Pijan.—Produce, $1\frac{1}{2}$ muid per *fétéree*, at 50 liv. 640 bottles, or 2*s*. the bottle. Within two leagues, Frontignan, so famous for its muscat wines, a *fétéree* of land has there yielded 300 liv. and half as much in a common year. Montbasin is also noted for its muscats, which sell as dear as those of Frontignan: three barriques make one muid, or 640 bottles: price in a common year, embarked at Cette, 300 liv.: the red wine of Montbasin, 100 liv. the three barriques.

To Nimes.—Several thousand acres of vines on a level plain.

Nimes.—For several leagues around, the vineyards yield from one muid to six per faumée; three, on an average; and the mean price 60 liv.; measure, 1715 cannes in a faumée, or 61,740 feet.

Plaisance.—An arpent of wheat, one year with another, yields more than an arpent of vines; but an arpent of vines sells for near double one of arable.

Auch to Fleuran.—Many vines: price 500 liv. (21*l*. 17*s*. 6*d*. per English acre).

Leitour.—Ditto on the stoney hills. Measure a sack, that land sown with a sack of 145*lb*. wheat: price 400 liv. (17*l*. 10*s*. per English acre).

La Morte.—*Landron*.—Vines on the hills. Measure the journal, and further ditto, in the rich vale on the Garonne: props of willow: price 1000 liv. (50*l*. per English acre).

Langon.—Yellow wine famous. Measure, arpent: produce 5 or 6 barriques: price 1000 liv. the arpent (50*l*. per English acre): produce 300 liv. (15*l*. per English acre.)

Barsac.—Sell at 5*s*. or 6*s*. the pas of 2 feet 6 inches; 90 pas the auln; and price 100 liv. Four rows of vines, or 4 aulns, make the breadth, and 90 pas long; are dressed four times a year, for 3 liv.; 45 rows a journal; but sell the space planted at one price, and the interval at another. The vines 20 liv. to 22 liv. the auln; the spaces between at 3 liv. Ninety by $2\frac{1}{2}$, or 180 feet multiplied by $2\frac{1}{2}$, for the breadth 450, and by 45, the number of rows, gives 20,250 square feet for a journal: 45 rows, at 22 liv. are 990 liv.: but 45 by 3, the price of the interval 135 liv.: average 562 liv. on the supposition of half vines, half intervals. Hills that hang to the Garonne, on the N. side, an immense range of vines.

Castres.—In a journal, the half only planted as above, will give, in a good year, 4 tonneaux, average $1\frac{1}{2}$. Two years ago, 35 liv. the tonneaux; this year, 60 liv. to 70 liv.: at 40 liv. it is 90 liv. per journal. Casks from the N. of Europe,

Europe, much inferior to French ones, because the staves are larger and thicker; price of them, 240 liv. the dozen. Journal of Bourdeaux, to arpent de France, as 0,6218 to 1.

Bourdeaux to Cubzac.—This country, part *palus* and part high: produce 5 to 6 barriques on the latter, and 2½ to 3 tonneaux on the other: 1200 liv. (61l. 8s. 6d. per English acre) a common price; but some journals rise to 3000 liv. (153l. 11s. 3d. per English acre), and even to 4000 liv. (191l. 19s. 3d.)

To Cavignac.—Produce wine 5 to 6 barriques the journal: make much brandy; 5 or 6 for 1; 220 bottles are sold at 120 liv.: their white wine for export is now at 150 liv. the tonneaux. The fogs and rains this year, when the vines were in blossom, damaged them so much, that the crop will be very poor; which they are not sorry for, since another great vintage or two would have ruined them, by the low price which is the consequence. They have a fabric of tartar.

ANGOUMOIS.—*To Petignac.*—*Roulet.*—The journal of 200 last each, 12 feet square, gives 1½ tonneaux; on good land, 4 to 6 barriques the journal of 200 carreaux of 12 feet square, 28,800 feet; an arpent 1½; on worse land 1½ to 3. A journal of wine not equal to the value of one of wheat: make much very fine brandy.

To Angoulême.—A journal, vines and arable land, of an equal price; 200 liv. common (10l. per English acre); produce 40 liv. (2l. per English acre).—An immense range of vines: produce 3 to 4 barriques; common price 10 liv.: make a great deal of good brandy, which sells now at 150 liv. the barrique, but has been at 60 liv.; best vineyard 300 liv. to 400 liv.

Verteuil.—Price 10 liv. to 15 liv. the barrique: proportion of brandy varies from 4 to 9 of wine for 1; in general 6 for 1.

Caudec.—Give 2, 3, and 4 barriques per journal.

POITOU.—*Chateaurault to Les Ormes.*—Poor hills, with vines, sell equally with their best vale lands. Measure the boiffelée.

TOURAIN.—*Tours.*—Produce 5 to 30 pieces per arpent; average 10; and mean price 15 liv. (150 liv. is 4l. os. 3d. per English acre): measure 100 chaîné of 25 feet, 62,500 feet.

Amboise.—An arpent 8 pieces, at 24 liv. 192 liv. (5l. 12s. per English acre): meadows a better estate and sell higher: the vines are 1500 liv. (43l. 15s. per English acre).

Blois to Chambord.—Almost all the country vines, and many new plantations, on a blowing sand; 2000 acres under the eye at once. Arpent 1600 toises: produce 12 poinçons, and, in good years, to 36, each 240 bottles; mostly made into brandy: in one village, last winter, they made 3000 poinçons: in some
years

years 3 of wine make 1: an arpent requires 7200 props, which last about eight years; the price 18 liv. to 20 liv. the thousand.

Chambord.—Same measure: average produce 12 pieces.

To Petiviers.—Produce, 12 pieces on good land, at 36 liv. now; but average 10, at 24 liv. or 240 liv. (8l. 8s. per English acre). Measure 100 perch, at 22 feet: price 1000 liv. (35l. per English acre).

Petiviers.—Price of an arpent 700 liv. (24l. 10s. per English acre): produce, 4 to 20 pieces; average 10: price now 50 liv.; but average 24 liv. or 240 liv. (8l. 8s. per English acre): labour, exclusive of vintage, 30 liv.

ISLE OF FRANCE.—*La Chapelle La Reine*.—Produce, 10 pieces, at 20 liv. 200 liv. (7l. per English acre): labour, exclusive of vintage, 30 liv.: measure 100 perches, 22 feet: price 600 liv. (21l. per English acre).

Liancourt.—A bad arpent 300 liv.; a good 600 liv. (450 liv. is 15l. 13s. 3d. per English acre): the measure 100 perches, at 22 feet: produce 3 muids, at 60 liv. 180 liv. (6l. 6s. per English acre) the muid, of 360 Paris bottles; yet bad, and not drank by gentlemen. Props last five or six years; 10 liv. the thousand; to keep an arpent in order, 2000 every year.

BRETAGNE.—*Auvergnac*.—A scattering of them from Guerande hither, and no where else N. except a few on the coast at Piriac and St. Gildas. Measure the journal of 1280 toises. Price 800 liv. (29l. 3s. 10d. per English acre): produce 6 to 8 barriques, each 240 pints of Paris: common price 15 liv. to 20 liv. This for a good year. They reckon, that if they have no crop, they lose 60 liv. per journal.

Nantes to Ancenis.—Produce, six barriques, now 25 liv. All promiscuous, and no props.

Ancenis.—Boifelée, the fifth of an arpent de Paris; sells per arpent 750 liv.: produce, in a common year, $1\frac{1}{2}$ barrique, or $7\frac{1}{2}$ per arpent: and common price 22 liv. 165 liv. (8l. 8s. 10d. per English acre): sometimes let, at three-fourths and one-half produce, to metayers. Labour, 6 liv. the boifelée, and 6 liv. the vintage; in all, 60 liv. the arpent. Great region of vines along the river; they extend not far from it: dung very little; many not once in fifteen years.

Varades.—Meadows sell at double the price of vineyards, yet these 600 liv. (30l. 14s. 3d. per English acre).

ANJOU.—*St. George*.—Boifelée, $\frac{1}{4}$ of an arpent, or 10,000 feet. An arpent, 40,000 feet, of the worst vines sells at 200 liv.; best 500 liv. (350 liv. is 14l. 9s. 7d. per English acre): produce $1\frac{1}{2}$ to 5 barriques.

Angers.—On the Loire, vineyards are various; some produce very little of the best wine; and others, by manuring, much of an inferior quality. Four barriques of good wine, on an arpent of 100 cords, of 25 feet, or 62,500 feet, is a common

a common produce, but not a medium: the price, in a plentiful year, 35 liv.; and in one of scarcity, 50 liv. the barrique: this year it is 25 liv. but the wine bad, the grapes not being ripe. Four barriques, at 40 liv. make 160 liv. Expences—labour in digging 24 liv.; vintage 3 liv. the barrique, or 12 liv. the arpent; casks, at 5 liv. 20 liv.; tythe $\frac{1}{11}$ th; besides taxes. The assertion general, that vines are the worst of all estates. Why? Because, for one year in five or six, they yield nothing; and sometimes little, for two or three years together. But admitted, at the same time, that if a man has money to enable him to keep his wine, two good years pay more than the fee simple. An arpent of the best vines on the Loire, sells from 3000 to 4000 liv. Now, to gain from hence some facts by combination, call this 3500 liv. and that it pays only 5 per cent.—it is 175 liv.; labour 36 liv.; casks 25 liv.; and here is 236 liv. without a penny for the king, or any *profit* to the proprietor: at 5 barriques, this makes 47 liv. each; a sure proof, either that the produce must be more than 5 barriques,—or that the price must be more than 47 liv.; probably 9, at 40 liv. (360 liv. is 9l. 13s. 4d. per English acre), for a mean arpent, at 1750 liv. (47l. 5s. 3d. per English acre).

Duretel.—Vines sells higher than arable, and meadow higher than vines.

La Roche Guyon.—Vines the worst estate in the hands of poor proprietors only.—Account of an arpent of Paris. Price, 1200 liv. (61l. 8s. 4d. per English acre).

	Liv.		Liv.
Rent; the interest of the price, at 4 per cent.	48	Produce, 6 muids, at 50 liv.	300
Labour, } 68 liv. (3l. 9s. 2d. English acre)	60	(15l. 7s. 1d. English acre.)	
Vintage, }	8	Expences, - - -	227
Manure, - - - -	40	Profit, - - - -	73
Six casks, - - - -	36		
Props, - - - -	30		
Taille, - - - -	5		
	227		

The muid 240 pints de Paris.

An extraordinary good year is 10 muids; a middling one six; and a bad one three. As to no produce at all, or so little as one, no such thing is known, not even in forty years. But query, hail?

In 1785, the crop was 12 muids, at 27 liv.	324 liv.
1786, 5 70	350
1787, 3 90	270
1788, 4½ 75	337

The labour consists in carrying of dung, pruning, trimming, four diggings, staking, tying, budding, &c.

How

How this husbandry can be esteemed unprofitable, as it is generally in France, surpasses my comprehension: in the hands of a man without a sufficient capital, it certainly is so; but thus also is that of wheat and barley.

Neuf Moutier.—In one of the richest districts in France, vines on the slopes sell at 2000 liv. to 2500 liv. (2250 liv. is 78l. 13s. 3d. per English acre) the arpent of 100 perches of 22 feet; where the rich vales let at 40 liv. to 60 liv.; and land of 40 liv. sells not higher than 1500 liv. or 1600 liv.

CHAMPAGNE.—*Epernay, &c.*—Two-thirds of all the country around, about Ay, Cumiere, Piery, Disy, Hautvilliers, &c. &c. under vines; and here all the famous Champagne wines are made. The country producing the fine white wine is all contained in the space of five leagues: and three or four more include Avise, Aungé, Lumenée, Crammont, &c. where they make the white wine, with white grapes only. At Ay, Piery, and Epernay, the white wine is all made with black grapes. La Montagne de Rheims, Bouzé, Verféé, Verznée, Tease, Airy, and Cumiere, for the *bon rouge de la Marne*. At Airy the first quality of the white also made. With the black grape they make either red or white wine, but with the white only white wine.

The price of the land is very high; at Piery 2000 liv.; at Ay 3000 liv. to 6000 liv.; at Hautvilliers 4000 liv. The worst in the country sells at 800 liv. (3000 liv. is 105l. 9s. per English acre; 6000 liv. is 210l. 18s.)

The produce, as may be supposed, varies much; at Ay, two to six pieces, and four the average; at Reuil and Vanteuil, to twenty pieces; at Hautvilliers, a convent of Benedictines, near Epernay, eighty arpents that yield two to four; and the price varies equally: at Ay, the average is two, at 200 liv.; one, at 150 liv.; and one at 50 liv. By another account, 200 liv. to 800 liv. the queue of two pieces; average 400 liv. the queue. At Reuil and Vanteuil it is 60 liv. to 100 liv. The vines of Villiers 700 liv. to 900 liv. the queue. Red wine is 150 liv. to 300 liv. — Account of a considerable vineyard, an average one, given me at Epernay.

For an Arpent.					Per English Acre.		
Interest of purchase 3000 liv.	-	-	-	Liv. 150	£.6	11	3
Labour,	-	-	-	55	2	8	1½
Renewal (<i>provins</i>) ditto,	-	-	-	24	1	1	0
Tying,	-	-	-	8	0	7	0
Props,	-	-	-	30	1	6	3
Manure, 1 part dung to 14 earth,	-	-	-	20	0	17	6
Vintage, 12 liv. a piece,	-	-	-	48	2	2	0
Casks,	-	-	-	15	0	13	1½
Taxes---taille, vingtieme, and capitation,	-	-	-	9	0	7	10½
Carry forward,	-	-	-	359	15	14	1½

<i>For an Arpent.</i>				<i>Per English Acre.</i>			
			<i>liv.</i>				
Brought forward,	-	-	359	£. 15	14	1½	
Aides 15 the queue,	-	-	30	1	6	3	
Cellar, vaults, prefs, reservoirs, tubs, &c. and building to hold them, 8000 liv. for 20 arpents, or 400 liv. per arpent, the interest,	-	-	20	0	17	6	
			409	17	17	10½	
<i>Product.</i> —Two pieces, at 200 liv.	-	-	400	17	10	0	
One ditto,	-	-	150	6	11	3	
One ditto,	-	-	50	2	3	9	
			600	26	5	0	
Expences,	-	-	409	17	17	10½	
Profit,	-	-	191	8	7	1½	

Which, with the interest charged, makes 10 per cent. on 3000 liv. land, and 400 liv. buildings; the general computation, and which seems admitted in the country. Sixty women are necessary to gather the grapes for four pieces, by reason of the attention paid in the choice of the bunches; a circumstance to which much of the fine flavour of the wine is owing, as well as to singularity of soil and climate; the former of which is all strongly calcareous, even to being white with the chalk in it. A fine lengthened slope of a chalk hill, hanging to the south, between Dify and Ay, which I examined, is entirely covered with vines, from top to bottom, and is the most celebrated in the province. It is indeed rather a marl than a chalk; in some places white, in others much browner, and may properly be called a calcareous loam on a chalk bottom. This marl is, in some places, very deep, and, in others, shallow. I was shewn pieces worth 6000 liv. the arpent, and others worth 3000 liv. but the difference of soil was not perceptible; nor do I credit that this difference depends on soil: none of it approaching to pure chalk. It is impossible to discover, in the present state of knowledge and information, on what depends the extraordinary quality of the wine. The people here assert, that in a piece of not more than three arpents, in which the soil is, to all appearance, absolutely similar, the middle arpent only shall yield the best wine, and the other two that of an inferior quality: in all such cases, where there is something not easily accounted for, the popular love of the marvellous always adds exaggeration, which is probably the case here. Attention in gathering and picking the grapes, and freeing every bunch from each grape that is the least unsound, must tend greatly to insure wine of the first quality, when the difference of soil is not striking.

The

The vines are planted promiscuously, 3 or 4 feet, or $2\frac{1}{2}$ from each other: are now about 18 inches or 2 feet high, and are tied to the props with small straw bands. Many plantations are far from being clean, some full of weeds; but a great number of hands spread all over the hill, farcling with their crooked hoe.

As to the culture, in the middle of January they give the cutting, *taillé*: in March dig the ground: in April and May they plant the provins: in June tie and hoe the saps: in August hoe again: in October, or, in good years, in September, the vintage.

To plant an arpent of vines, costs in all 50 louis d'or: there are 8000 plants on an acre: and 24,000 saps and the props cost 500 liv.: to keep up the stock of props 30 liv. a year. It is three years before they bear any thing, and six before the wine is good. None are planted now; on the contrary, they grub up.

Very few persons have more than twenty or thirty arpents, except the Marquis de Sillery, near Rheims, who has two hundred and fifty arpents. At Piery there are twenty arpents now to be sold; a new house, a good cellar, magazine, a good press, and every thing complete, for 60,000 liv.: the vines a little, but not much, neglected. For this sum I could buy a noble farm in the Bourbonnois, and make more in seven years, than by vines in twenty.

Those who have not a press of their own, are subject to hazards, which must necessarily turn the scale very contrary to the interests of the small proprietor. They pay 3 liv. for the two first pieces, and 25*s.* for all the rest: but, as they must wait the owner's convenience, their wine sometimes is so damaged, that what would have been white, becomes red. Steeping, before pressing, makes red wine.

As to pressing, to do it very quickly and powerfully, is much the better way; and they prefer turning the wheel of the press by six, seven, or eight men, rather than by a horse.

In regard to the aides, or tax, on the transfer of wine, the proprietor who sells a piece worth 200 liv. pays

	-	-	10 liv.
Ten sols per liv.	-	-	5
Augmentation; <i>gauge</i> , <i>constage</i> , &c.	-	-	5
Octroi de la Ville and du Roi,	-	-	5
			<u>25</u>

The merchant, when he sells it, pays the same; and every person through whose hands it passes. The duty at the port, on exportation, is about 15 liv. each piece. The cabareteer and aubergiste pays 30 or 40 liv. more retail duty. The wine trade with England used to be directly from Epernay; but now the wine is sent to Calais, Bologne, Montreuil, and Guernsey, in order to be passed into England, they suppose here, by smuggling. This may explain our Cham-

pagne not being so good as formerly. Should the good genius of THE PLOUGH ever permit me to be an importer of Champagne, I would desire Mons. Quatre-foux Pareclaine, merchant at Epernay, to send me some of what I drank in his fine cellars. But what a pretty supposition, that a farmer, in England, should presume to drink Champagne, even in idea! The world must be turned topsyturvy before a bottle of it can ever be on my table. Go to the monopolizers and exporters of woollens—go to—and to—and every where—except to a friend of the plough!

The ecclesiastical tithe is a heavy burthen. At Hautvilliers the eleventh is taken for dixme; at Piery the twentieth, or in money 4 liv. 10s.; at Ay 48s.; and at Epernay 30s.; at Disy $\frac{1}{12}$; but with all this weight of tax, nothing is known or ever heard of like the enormities practised in England of taking the actual tenth.

The idea of the poverty attending vines is here as strong as in any other part of France: the little and poor proprietors are all in misery. The fact is obvious, that a hazardous and uncertain culture is ridiculous, for a man with a weak capital. How could a Kentish labourer be a hop-planter? But no discrimination is found commonly in France—the assertion is general, that the vine provinces are the poorest; but an assertion without explanation is utterly ridiculous. To render vines profitable it is a common observation here, that a man ought to have one-third of his property in rents, one-third in farm, and one-third in vines.

It is easy to conceive, that the most successful cultivators are those who have the largest capitals. It is thus that we hear of the exertions of merchants; men who not only have many arpents of their own vines, but buy the wine of all their little neighbours. Mons. Lafnier, at Ay, has from fifty to sixty thousand bottles of wine always in his cellar; and M. Dorfé from thirty to forty thousand.

Rheims.—Average price of an arpent 2400 liv. (84l. per English acre.)

<i>Account.</i>						
				Liv.		Liv.
Interest,	-	-	-	-	120	Produce, 3 pieces, at
Culture by contract,	-	-	-	-	40	240 liv. - 420
Manured every fifth year, 60 liv. and 1000 men or women's						(14l. 14s. per English
loads of earth to mix, 36 liv.	-	-	-	-	96	acre.)
Props, 20 bundles,	-	-	-	-	12	
Extra hoeing,	-	-	-	-	6	
Taxes,	-	-	-	-	8	
Casks,	-	-	-	-	18	
Vintage, at 20s. a day,	-	-	-	-	18	
Press, four men, at 20s. and 20s. food,	-	-	-	-	8	
Carry forward,	-	-	-	-	326	420

V I N E S.

13

	Liv.		Liv.
Brought forward,	326	Brought forward,	420
Interest of buildings, cellar, magazine, press, and utensils,	30		
The cellar-man 200 liv. for 20 arpents, per arpent,	10		
	<u>366</u>	Loss,	24
Labour 64 liv. (2l. 4s. 7d. per English acre): interest of which for first year,	18		
	<u>384</u>		
Droit d'aides $7\frac{1}{2}$ per cent. on value, three pieces gross, besides conflag, &c. &c.	40		
	<u>424</u>		<u>424</u>

But instead of loss, every one I talked with, and the gentleman himself who gave me this account, Mons. Cadot L'Ainé, who has a considerable vineyard, assured me, that they pay, on an average of ten years, $7\frac{1}{2}$ per cent on the capital; this will make a difference of 75 liv. which, with the 24 liv. loss in this account, is 99 liv. which must be partly deducted from these expences, and partly added to the produce. On an average the manuring is, I suspect, estimated too high. The vines this year promise to yield not a piece per arpent; not by reason of frosts last winter, but of the cold being so late as last week (in July).

The little proprietors here also are generally very poor, and many are ruined by not being able to wait for a price. The wine trade at Rheims amounts to four or five millions per annum (175,000l. to 218,700l.).

Sillery.—The Marquis has a hundred and sixty arpents under vines, and not two hundred and fifty as I had been informed; he has cellar room for two hundred pieces; this was mentioned as an extraordinary circumstance, but it shews that he is very deficient in a power of keeping his wines: a hundred and sixty arpents, at three each, are four hundred and eighty pieces; so that his cellar, instead of containing the crop of three years, will not hold half the crop of one year. It is evidently a business that ought to have a large capital, and even an apparently superfluous one, or all the profit goes to the merchant.

LORRAINE.—Braban.—Price, 175 liv. (25l. 10s. 1d. per English acre). Measure, 80 perches, at $11\frac{1}{2}$ feet.

Verdun.—Measure, 480 verges, of 8 feet 2 inches, equal 66 perches of Paris: highest sell to 2400 liv.; not uncommon 1100 liv. (84l. per English acre).

Metz.—Measure, journal, equal to $69\frac{1}{2}$ perches of Paris. Price, 1200 liv. (89l. 14s. per English acre).

Account.

Account.

	Liv.		Liv.
Culture 6 liv. per monée, 8 monées in the journal, -	48	Produce, 40 hottes, each	
Props 20 <i>f.</i> the monée, -	8	44 pints of Paris, at	
Two loads of dung, at 3 liv. -	6	6½ liv. -	260
Repairs of casks, -	6	(20 <i>l.</i> 9 <i>s.</i> 6 <i>d.</i> per English	
Taxes, taille, and capitation, -	13	acre.)	
Ditto vingtieme, -	4	Expences, -	111
Pressing 1-30th the crop, -	9	Profit, -	149
Vintage, -	16		
	<u>111</u>		
Labour 64 liv. (5 <i>l.</i> 0 <i>s.</i> 7 <i>d.</i> per English acre).			

But interest of 1200 liv. is 60 liv. and the tithe here is from the twentieth to the thirtieth to be deducted. The general assertion, which seemed to admit no doubt, was that the profit is 7 per cent.

Pont au Mousson.—Measure a journal, 10 hommes, or 250 verges of 10 feet, the foot of 10 inches.

Account.

	Liv.		Liv.
Labour, -	30	Produce, 400 hottes, on	
Manuring 64 liv. but once in eight years, -	8	13 arpents, 30 per jour-	
Vintage, twenty-five persons for 13 journals, at 12 <i>f.</i> fed, 3	3	nal (14 <i>l.</i> 11 <i>s.</i> 3 <i>d.</i> per	
Pres, -	2	English acre), -	180
Casks, -	16	Expences, -	121
Taxes, no droit d'aides, -	3	Profit, -	59
Props, -	4		
Arpent, 800 liv. (66 <i>l.</i> 2 <i>s.</i> 1 <i>d.</i> per English acre,) } -	45		
Buildings, 60			
860			
Interest of ditto, -			
Droit de Gabelle, and gauge, 13 <i>f.</i> per hotte, -	10		
	<u>121</u>		
Labour, 33 liv. (2 <i>l.</i> 9 <i>s.</i> 10 <i>d.</i> per English acre.)			

But some little error here, for the common calculation is, that they pay 10 per cent.

Vines are planted more and more, the culture augmenting every day; they plant the land proper for wheat as readily as any other.

Nancy.—Measure, 19,360 feet. Price of the best, 1000 liv.; the worst 500 liv. (at 750 liv. 65*l.* 12*s.* 6*d.* per English acre). They have what they call the *gross race*, and the *petite race* of vines; the first gives much in quantity, but of a bad quality; the latter wine of a good quality, but in quantity small.

The

The medium produce is twenty measures per journal, of eighteen pots of two pints of Paris, of the gross race, and ten of the petite. The mean price of the first 5 liv.; of the latter 10 liv. (at 100 liv. it is 8l. 15s. per English acre),

Luneville.—The journal 15,620 feet. Produce, forty measures of the gross race, of all sorts; average twelve measures, 6 liv. 15s. Price, per journal, 550 liv. (56l. 17s. 6d. per English acre). Produce, 80 liv. (8l. 12s. per English acre).

ALSACE.—*Wilttenheim.*—Measure, 100 verges, at 22 feet. Price, 900 liv. (31l. 10s. per English acre).

Strasbourg.—Measure, 24,000 feet. Price, 800 liv. (55l. 7s. 9d. per English acre). Produce, thirty measures, of twenty-four pints of Paris. Good price, 6 liv. the measure; middling, 4 liv. 10s.; low, 3 liv. (at 150 liv. produce, it is 10l. 7s. 4d. per English acre).

Schelestadt.—Produce, forty measures. Price, 6 liv. the measure, 240 liv. (16l. 12s. 6d. per English acre).

Isenheim.—Some so high as 3000 liv. but few that yield a hundred measures, at 6 liv. but by no means common.

FRANCHE COMPTE.—*Beaume.*—Measure, an œuvre. Produce, a muid, at 40 liv. to 60 liv.

Besançon.—Measure, a journal of eight œuvres; the œuvre 45 perches of 9½ feet. Price, 40 liv. to 400 liv. the œuvre. Produce, a quarter of a muid to one muid, or eight per journal. The grape, called the *gammé*, yields the most wine, but of the worst quality. Common price, 60 liv. the muid.—Account of a journal, 32,400 feet:

	Liv.		Liv.
Interest of 2400 liv. (123l. 6s. English acre), at 5 per cent.	120	Produce, 4 muids, at	
Culture, 5 liv. the œuvre,	40	60 liv. (12l. 6s. per	
Props, 1 liv. ditto,	8	English acre,	240
Vintage, 5 liv. ditto,	40	Expences, - -	214
Tonneaux, 12 liv. the muid new; but reparation a trifle,	0	Profit, - -	26
Taille, capitation, and vingtieme 8s.	3 4s.		
No droit d'aide,			
Never dung, thinking it spoils the wine.			
Fausse, renovation 3 liv. per 100,	3		
Tythe, none in common; but, where found, only from			
one-twelfth to one-twentieth.			
	214		
Labour, 83 liv. (4l. 4s. per English acre.)			

The common idea is, that the produce of an œuvre is 30 liv.

And the expence - - - 12

Or profit per journal - - - 18

Interest - - - 144

Remains net - - - 120

24

They

They are also generally supposed to yield but 5 per cent. profit on capital, and sometimes not so much.

The vines here are in double rows, at about two feet, and the props placed in an inclining position, so as to join over the center of that space, and are there tied to a horizontal prop; by which means any small sticks answer the purpose of props.

BOURGOGNE.—*Dijon*.—Measure, journal of 900 toises. Price of common vineyards, 1000 liv. to 1500 liv. (at 1250 liv. it is 63l. 19s. 2d. per English acre), the best about Dijon. Produce, about seven or eight pieces, or muids, at 36 liv. (at 270 liv. it is 13l. 16s. 6d. per English acre): pay 6 per cent. But the fine vineyards of Veauue, Romané, Tash, &c. sell at 3000 liv.

Clos de Veaujeau.—This is the most famous of all the vineyards of Burgundy, the wine selling at the highest price; it contains above an hundred journals, walled in, and belongs to a convent of Bernardine monks. This reminds me of Hautvilliers, near Epernay, one of the finest vineyards in Champagne, having reverend masters also. There are no trees in that at Clos de Veaujeau, though in all the more common ones. The vines are now not more than two or three feet high, the props being short also; they are not in rows, but planted promiscuously. The soil a brown loam, inclining to reddish, with stones in it, which, on trial, proved calcareous. It is not like the fine vineyards of Champagne, on a declivity, but flat, at the foot of a hill which is rocky. The produce, $1\frac{1}{4}$ muid, at 600 liv. the muid, 900 liv. (46l. 1s. 4d. per English acre.) The vineyard would, it is said, sell for 10,000 liv. the journal (511l. 17s. 6d. per English acre). They make white wine also, of a quality and price equal to the red.

Nuys.—The finest vineyards sell up to 7000 liv. and 8000 liv. a journal; but in common about 1000 liv. (51l. 3s. 9d. per English acre.) The produce of the fine wines never great; four pieces, or muids, of half a queue, or two hundred and forty bottles, is a great produce; $1\frac{1}{4}$ middling; and, in bad years, none at all, which happens sometimes, as at present, after a very fine appearance; but the frosts at the end of May cut them off so entirely, that there is not a grape to be seen. Such wine as the poor people drink, sells commonly at 60 liv. or 70 liv. the queue, now 120 liv. — Account of a journal:

	Liv.		Liv.
Interest, - - - - -	50	Produce, $1\frac{1}{4}$ piece, at	
Culture, by contract, (some at 60 liv.) - - -	72	200 liv. (8l. 19s. 4d.	
Props, called here, not <i>echalats</i> , but <i>paifeaux</i> , - - -	6	per English acre),	175
Casks repaired, - - - - -	6	Expences, - - -	148
Taxes, - - - - -	8	Profit, - - -	27
Vintage, - - - - -	6		
	148		

One

One vigneron, with his wife and four children, must all work very well to do four journals; for which, if at 60 liv. they receive 240 liv. but have the winter for other work. The vineyards which bear the greatest reputation here, after the Clos de Veaujeau, are those of St. George, Romané, La Tashe, de Vaume, Richebourg, Chambertin, and Côte roté. The best is 25l. the piece, or 3 liv. the bottle; but this is the price of the vintage; kept three or four years it sells for 4 liv. and even 5 liv. the bottle in the country.

In 1782, the crop was so great, that they gave 12 liv. for very miserable casks, and sold them full at 20 liv. but the wine not good. 1785 was the last great crop, when the price of a cask, a tonneau, which commonly is 12 liv. new, was 36 liv. to 40 liv. but the wine bad: they never dung for fine wines, only for bad ones, but they manure sometimes with earth. New vineyards give a larger quantity of wine than old ones, but the wine of the latter the best quality. There are here, as in all the other wine provinces, many small proprietors who have but patches of vines, and always sell their grapes; but there is no idea of their being poorer than if they did not pursue this culture.

Beaume.—The stones in the vineyards here calcareous. An œuvre costs 400 liv. 3200 liv. per journal (163l. 16s. per English acre) Produce, two or three pieces, at 15 liv. this common wine; but there are fine ones vastly higher. The wines of greatest name here, after the *Clos de Veaujeau*, are Volny, Pomar, Aloes, Beaume, Savigné, Mulso (white), and Maureauché, which last sells, ready to drink, at 4 liv. the bottle; new at 1200 liv. the queue. They give here great accounts of the profit attending this culture; but, on being analyzed, they are found all to turn on the supposition of having good cellars, and keeping for a price, which is mere merchandize, and not cultivation; for the merchant who buys at the vintage, to fill his cellars, is exactly in the same predicament; and to enjoy this profit, it is not necessary to cultivate a single acre.

Chagnie.—Price of an œuvre 100 liv.; eight of them to a journal, 800 liv. (40l. 19s. per English acre). Common produce, one piece per œuvre: the price now 60 liv. the piece, but 20 liv. more common (160 liv. is 8l. 3s. 7d. per English acre).

Couch.—An œuvre, the eighth of a journal, sells at 100 liv.; but there is more at 80 liv. Produce, one piece, at 36 liv. common price, but now 60 liv.; usually one piece at 25 liv.: half the produce, by contract, for labour (at the price of 640 liv. it is 32l. 15s. 4d. per English acre.)

BOURBONNOIS.—*Moulins.*—Sell to 1000 liv. the arpent (34l. 12s. 1d. per English acre) of eight boifeleés, each 168 toises, 48,384 feet. In a good year, produce eight poinçons, at 30 liv.; common year five or six, at 30 liv. for common vineyards: half the produce is paid, by contract, for labour. Very rarely dung: props 7 liv.: tithe the eleventh.

Riaux.—Common produce, half a piece per œuvre, or boifelée; one-fourth for proprietor, and one-fourth for labour.

St. Ponerin.—Vineyards on hills, 100 liv. the boifelée; 800 liv. the arpent (27l. 13s. 10d. per English acre).

AUVERGNE.—*Riom.*—Sell at 200 liv. the œuvre; sometimes 1*l.* the bottle, or 15*l.* the pot; now 3 liv.; middling price 20*l.* to 30*l.*

Clermont.—Measure, 800 toises: best 300 liv.; worst 100 liv.; middling 150 liv. an œuvre; 1200 liv. the arpent (70l. per English acre); medium ten pots, each sixteen pints of Paris; on the best land fifteen, and the mean price 30*l.*; at present 3 liv.: tie them with willow branches, *salix viminea*.

Izore.—In common sell at 500 liv. or 600 liv. the sétérée, but in good situations 800 liv. (46l. 12s. 9d. per English acre): the œuvre of the best yields two sommes; middling one and a half; bad one: the somme fix pots, each sixteen pints of Paris: the common price after the vintage, 25*l.* to 30*l.* the fix pots (at 168 liv. it is 9l. 16s. per English acre).

Account of an Œuvre.

	Liv.	Sols.		Liv.
Labour,	8	0	Produce, 1½ somme, at	
Props,	2	10	30 <i>l.</i> the pot, 12 liv.	
Interest buildings, 100 liv. 50 œuvres,	2	8	the fous,	21
Interest of 100 liv. purchase	5	0	Expences,	19
Taille, &c.	0	11	Profit,	2
Provins,	0	8		
Dung ditto,	0	2		
	19	1		

By which we are only to understand that they pay little more than common interest.

Briude.—Price, 10 liv. to 100 liv. (55 liv. is 25l. 12s. 9d. per English acre): the worst are on rocks, where a storm drives soil and crop away. It is very remarkable that the rocky declivities, which are so natural to the vine, here yield a wine far inferior to the rich plain of the Limagne. This deserves remark, and a further attention from the naturalists, who examine this very curious and interesting country. They have thirty-five sorts of vines here; the *Lange dit de cbien* is the first.

DAUPHINE.—*Montelimart.*—Price of a sétérée, half an arpent of Paris, 168 liv. to 480 liv. and produces seven measures of wine, called charges, each of a hundred bottles, the common price 15 liv. or 75 liv. per sétérée.

Account.

Account.

					Liv.						Liv.
Interest of 300 liv. (44l. 12s. 6d. per English acre) mean						Produce, (7l. 17s. 6d.					
price,	-	-	-	-	15	English acre),					75
Culture,	1st,	-	-	20 liv.	} - 30	Expences,					58
	2d,	-	-	10		Profit,					17
	3d, paid by cuttings,	-	-	0							
No props.											
Vintage,	-	-	-	-	6						
Casks,	-	-	-	-	3						
Taxes,	-	-	-	-	2						
No droit d'aides.											
Cellar, &c. &c.	-	-	-	-	2						
					58						

PROVENCE.—*Avignon*.—Price 70 liv. the eymena, and produce three barrels: price at present, 6 liv. the barrel, or 3*s*. the bottle; common price 2*s*. The best vines give 8 per cent. on capital.

Aix.—The carterée 800 liv. (63l. per English acre). Measure, six hundred cannes for the carterée; the canne of eight pans, the pan of nine inches and three lines.

Tour d'Aigues.—The produce of a fomma is a hundred coup, each 60 lb. 3 lb. a pot; and the common bottle 2½ lb.: 100 lb. of grapes give 60 lb. of wine. Mean price 30*s*. the coup, or per fomma 150 liv. Measure, 50,400 feet.

Account.

					Liv.	Sols.						Liv.	Sols.
Culture,					48	0	Produce, (4l. 19s. 6d.						
Hoeing and pruning,					12	0	per English acre,) 150					0	
Vintage and carriage,					10	0	Expences,					126	12
Interest of buildings, &c.					15	0	Profit,					23	8
Taille, by the cadastre (but this varies every year, by													
reason of provincial expence),					10	0							
Seigneurial duty,					1	12							
Price, 600 liv. (20l. 2s. 6d. per English acre), interest,					30	0							
					126	12							

Hyerès.—Usually planted in double rows, at three or four feet, with intervals of different distances, ploughed, or hoed for corn; and this method they call *mayoivère*. Two hundred and eighty plants produce one bout of wine, of six barrels, each barrel twenty-eight pots, and each pot 3 lb. Common price per bout 50 liv.

Observations.

It is merely for curiosity I observe, that the average of all the prices per measure, in the purchase of these vineyards, amounts to 61l. 8s. per acre; such a medium demands very little attention, unless the minutes were exceedingly numerous, and equally so in every province. Rejecting those in which the prices exceed 100l. an acre, as going certainly much beyond what can possibly be the medium of the kingdom, the average of the rest is 41l. 1s. 6d. per acre. But I should wish that attention were rather given to another mode of calculating the price and produce of these vineyards; there are twenty-three minutes that include both price and produce; the average of these exclusive of such as rise above 100l. purchase, and 21l. produce, is

For the price per English acre,	-	£. 45	1	0
For the produce,	-	9	2	0*
Which is in French money, per arpent of Paris,—	Price,	-	871	liv.
	Produce,		175	

From which it appears, that vines, in these provinces, give, in annual produce, one-fifth of their fee simple.

The amount of labour per acre, on an average of those minutes, in which it appears to be satisfactorily noted, and rejecting the higher articles as before, is 2l. 12s. 6d.

The net profit appears, from several of the minutes, to vibrate between 7 and 10 per cent. on the capital employed.

How nearly these averages, noticed in my route, approach the real medium of the whole kingdom, it is impossible, with any degree of accuracy, to conjecture; but I am inclined to believe, that the difference may not be considerable. This, however, must be left, with a proper diffidence, to the well informed reader's superior sagacity.

The importance of this branch of cultivation to the kingdom, and the idea so common there, I may almost say universal, that the wine provinces are the poorest, and that the culture is mischievous to the national interests, are subjects too curious to be dismissed hastily: as my opinion is directly the reverse of the prevalent one in France, it is necessary to explain the circumstances on which it is founded.

* The Marquis de Mirabeau observed, that an arpent of vines is, on an average, worth double the best arpent of corn. *L'Ami des Hommes*. 5th edit. 1760. tom. vi. p. 137. This agrees pretty well with my notes.

It appears, by the preceding minutes, that the value of the soil thus employed was probably higher than it could be in any other application, good meadows (valuable from their scarcity) alone excepted: that the produce much exceeds all others; and lastly, that the employment depending upon it is very considerable. Under such leading and powerful circumstances, and connected as they are with another not less essential, that vast tracts of the land thus employed are rock and declivities, too steep for the plough,—it should seem astonishing, how an idea could ever be entertained that such a cultivation could be prejudicial to a country: it is, however, very general in France.

The question ought to be put solely on this issue,—Would the same land, under any other culture, sell at the same price? 45l. per acre, amounting to thirty years purchase, at 30s. an acre, is such a value as France, in the richest vales, knows nothing of (meadows alone excepted, which will always be valuable according to scarcity and heat of climate), and we in England as little. But this greater value arises not by any means from the richest lands, but from those which, considered on a medium, are certainly very inferior to the rest of the kingdom. Great tracts could be applied to no other use than that of sheep-walk or warren; much is situated, in some of the poorest soils of the kingdom, on sands, sharp gravels, and lands so stoney, as to be inapplicable to the plough: to possess a climate that gives the power of raising such land to the value of 30l. or 40l. an acre, is, beyond all doubt or question, a superiority that cannot be too much valued.

The amount of the produce is not less striking: rich pastures sell every where at high prices, because they are attended with no expences; and thus a small product may be classed with a large one; but it is not so with vines. The average of 9l. an acre, on a mean of good and bad years, is such as no other plant will equal that is cultivated in France, watered lands alone excepted. It is only on singularly fine soils, in certain peculiar districts, that any thing approaching such a product is to be met with. There is no part of Europe, in which a crop of wheat, of such value, is not exceedingly large, and much beyond the average. That of all the wheat, in any of the richest counties in England, vibrates between 6l. and 7l. an acre, prepared for, perhaps, by a barren and expensive fallow,—at least by something much less profitable than itself. What then are we to think of a plant which covers your land with a rich crop of wheat every year?

There are many men, however, in France, who will say, YOUR REASONING MUST BE ERRONEOUS; *for there is not a vine proprietor in France, who would not give you his vineyard for your ideal wheat of every year.* The observation may be perfectly just; but it is no answer to me, who am not speaking of *net profit*, but of *produce*. To him who considers the subject in a national light, and as a politician, the former is not the object;—the great point is to secure a large produce. The prince may levy such heavy taxes on the produce; and
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it may be gained by such an operose culture, that the poor may levy a much heavier for their labour; the consequence to the cultivator may be a low profit, but to the nation at large the importance of the product remains the same, and unimpeached. And in this light I look upon that of vines as so considerable, that should the fact of the real average of the whole kingdom prove less than I make it—even so little as 7l. per acre, I should still esteem the culture an object of infinite national consequence. It is more than sugar pays in the West Indies, which is usually supposed the most profitable cultivation in the world.

In regard to the net profit, which on the minutes vibrates from 7 to 10 per cent. it does not seem to some to be adequate to the peculiar happiness of the climate, and the reputation of the wines throughout the world; or to the price of the land, or amount of the product. But, in this respect, it must be considered, that the minutes, so far as they concern the returns in money, are the prices of the vintage only; whereas every man that has a capital sufficient, by keeping his wine for three months only, adds considerably to the profit.—If a proprietor be merely able to store his crop in casks in his cellar, long enough to avoid the immediate necessity of selling for want of casks, he has an advance of price, which will greatly augment the ratio of his profit: it is very fair to give the cultivator of vines the same time that is taken by most of his brethren with whom corn is the object, that is to say, six months from the harvest. The difference of profit is exceedingly great between the sale in the vintage, and that of six months after. But it is still of more consequence to observe, that the rate per cent. here mentioned, is not on the mere business of the cultivator, but on the purchase of the estate upon which the culture is carried on. This makes an enormous difference. If agriculture, in England, yield 15 per cent. and landed property three, throw the two together, and the mean is not more than $5\frac{1}{2}$ or 6; and those who, in England, buy an estate, and stock, and cultivate it, and make 6 per cent. will not think they are suffering, notwithstanding the accumulated advantages of a century of freedom.

It is this large annual product which in the vine provinces gives bread to such numbers of people; beside the direct object of common labour, which amounts, as we have seen, to 2l. 12s. 6d. per acre, and consequently is above thrice as high as that of common arable crops; and, if they are not in very complete culture, the superiority is much more considerable, there is the trade of casks, which, independent of the employment of coopers, gives a value to the woods of a country, as well as an activity to foreign commerce, by the import of staves and hoops. The props have the same effect as our hop-poles, and render willow plantations, as well as common under-woods, much more valuable than they would be otherwise. Besides, there is the circumstance, that so many politi-

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cians regard alone, the exportation of the wine, and the cask or the bottle; forming, whether in the shape of wine or of brandy (as I shall by and by shew), one of the greatest trades of export that is to be seen in Europe; as much the export of French labour, as that of the silks of Lyons, or the cloths of Louviers. And after all this, if I be allowed to place last, what in truth ought ever to be regarded first, that is, the home consumption, there is the invaluable advantage of a whole people being well and amply supplied with a beverage, the effect of their own industry, and the result of their own labour; and it surely will not be thought a small advantage, that a nation has recourse, for supplying this consumption, to her sands, gravels, declivities and rocks; that she demands it not of her rich plains, but of those lands which her less fortunate neighbours are forced to cover with copse or rabbits.

But here we are not to forget, that argument is always to give way to fact. From what I have just said, the reader is not to conclude that such lands *only* are under vines in France, the contrary is the fact; I found them on the noble and fertile plain of the Garonne; on the richest lands in the vale which extends from Narbonne to Nimes; in the vales of Dauphiné and of the Loire; and, in a word, indiscriminately on every sort of land in all the wine provinces; but I found them also on such rocky and bad soils as I have described, and in so great quantities as to shew how well adapted they are to such soils and situations. There are two reasons why vines are so often found in rich plains; the first is, the export of wheat being either prohibited, or allowed with such irregularity, that the farmer is never sure of a price: but the export of wine and brandy has never been stopped for a moment. The effect of such a contrast in policy must have been considerable, and I saw its influence in every part of France, by the new vineyards already planted, or begun to be planted, on corn lands, while the people were starving for want of bread; of such consequence, in the encouragement of any culture, is a *steady unvarying policy!* The fact is the more striking in France, because the vine culture is very much burthened in taxation; but, always possessing a free trade, it thrives. The second reason is, that the culture of this plant is much better understood in France than that of corn. An advantageous rotation of crops, and that arrangement of a farm which makes cattle necessary to corn, and corn necessary to cattle, on which the profit of arable land so much depends, is what the French have hardly an idea of. In their practice it is never to be seen, and in their books it is never to be read. But their vineyards are gardens; the turnips of Norfolk, the carrots of Suffolk, the beans of Kent, and the cabbages of an English gentleman, are not so clean as the vines of France, while the whole œconomy of the plant is perfectly understood, both in theory and practice.

It is a question which I have heard often started in conversation, whether it be nationally more advantageous that wine should be, as in France, the com-
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mon beverage, or beer, as in England? How it should ever become a question I cannot understand. We are, of necessity, *obliged* to have recourse to our best lands to supply our drink; the French, under a good government, would have *all* theirs from their worst soils. The sands of Sologne, which are passed in the way from Blois to Chambord, &c. &c. are as bad as ours in Suffolk and Norfolk, which feed only rabbits. The French sands, by means of vines, yield 8l. or 9l. an acre, and those of Suffolk not so many shillings. Through nine-tenths of England, the land that yields wheat in every rotation yields also barley. If our hills, rocks, sands, and chalky declivities gave us our liquor, could we not apply these richer soils to something better than beer? Could we not, by means of rotations, that made potatoes, tares, beans, and artificial grasses the preparatives for wheat alternately, contrive to raise infinitely more bread, beef, and mutton, if barley did not of necessity come in for an attention equal to what we give to wheat? Wheat, rye, barley, and oats exhaust, every other crop we raise, either actually or consequentially, ameliorates. Would it be no advantage to strike out one of these exhausters, and substitute an improver? Would it be no advantage to feed all the horses of Britain on beans instead of oats? Your populousness may be proportioned to your quantity of bread, mutton, and beef. With one-fourth of your land under barley, can you have as much bread, mutton, and beef, as if you were not under the necessity of having any barley at all? How few agricultural combinations must there be in a mind that can entertain doubts on such questions? There is a common idea that wine is not a wholesome beverage, I take this to be a vulgar error; bad wine, or wine kept till sharp and acid, may be unwholesome, but so is bad beer, or beer kept till acid: but this has nothing to do with the question. If the lower people be forced, through poverty, to drink bad liquor, the complaint ought not to be that wine is unwholesome, but that a bad government is unwholesome: the beer drinkers under such a one, will not have much to boast. There may be more strength and vigour of body among the common people in England than among the same class in France; if this be true, it proves nothing against wine. Are the French poor as well fed as ours? Do they eat an equal quantity of animal flesh? Were they as free? These common prejudices, for or against certain liquors, are usually built on very insufficient observation.

But the enemies of vineyards recur to the charge; *the vine provinces are the poorest of the kingdom; and you always see misery among the poor proportioned to the quantity of vines**.—This is the main hinge on which the argument turns; it is

* So lately as in the Journal Physique for May 1790, Monf. Roland de la Platiere, a gentleman with whom I had the pleasure of some agreeable conversation at Lyons (in the happier period of his life, before he was involved in the misery and guilt of revolutions), says, that of all countries the vine ones are the poorest, and the people the most wretched! And in the *cabier* of the clergy of Auxerre, it is demanded, that the ordonances against planting vines on land proper for corn be executed. P. 19.

an observation that has been made to me a thousand times in France, and conversation never touches on the subject but you are sure to hear it repeated.— There is some truth in it as a fact—there is none as an argument.

There is usually a considerable population in vine provinces; and doubtless it is not surprising, that where there is a great population there should be many poor, under a bad government. But there is another reason much more satisfactory, which arises not at all from the nature of the culture, but from the abuse of it.

It is the smallness of the property into which vineyards are usually divided; a circumstance carried to such excess, that the misery flowing from it can hardly be imagined by those who are whirled through France in a post-chaise. The nature of the culture depending almost entirely on manual labour, and demanding no other capital than the possession of the land and a pair of arms; no carts, no ploughs, no cattle, necessarily leads the poor people to this species of property; and the universal practice of dividing it between the children, multiplies these little farms to such a degree, that a family depends on a spot of land for support that cannot possibly yield it; this weakens the application to other industry, rivets the children to a spot from which they ought to emigrate, and gives them a flattering interest in a piece of land, that tempts them to remain when better interests call them elsewhere. The consequence is, their labouring as much as they can for their richer neighbours; their own little vineyards are then neglected; and that culture, which to a more able proprietor is decisively advantageous, becomes ruinous to insufficient funds. But a misfortune, greater even than this, is the uncertainty of the crop; to a man of a proper capital, and who consequently regards only the average of seven years, this is of no account; but to the poor proprietor, who lives from hand to mouth, it is fatal; he cannot see half a year's labour lost by hail, frost, cold, or other inclemencies of the season, without seeing, at the same time, his children in want of bread; before the ample produce comes, which certainly will come on the average account, he finds himself in the hospital.

This I take to be the origin of that general and too indiscriminate condemnation of vineyards in France. The poverty is obvious; it is connected with vines, and for want of proper distinctions, it is considered as necessarily flowing from vineyards; but, in fact, it is merely the result of small properties amongst the poor: a poor man can no where be better situated than in a vine province, provided he possess not a plant. Whatever may be the season, the poor are sure of ample employment among their richer neighbours, and to an amount, as we have above seen, thrice as great as any other arable lands afford. That culture which demands 2l. 12s. in hand labour only; whether there be crop or no crop, and which employs women and children of all ages, ought not surely to be con-

demned as the origin of distress among the poor. Attribute the fact to its true cause, the desire and spirit of possessing landed-property, which is universal in France, and occasions infinite misery. This circumstance, so prevalent in that kingdom, and (comparatively speaking) so little known in ours, where the poor are so much more at their ease than in France and most other countries, is very curious to a political observer. What an apparent contradiction, that property should be the parent of poverty, yet there is not a clearer or better ascertained fact in the range of modern politics. The only property fit for a poor family, is their cottage, garden, and perhaps grass land enough to yield milk; this needs not of necessity impede their daily labour; if they have more, they are to be classed with farmers, and will have arable fields, which must, in the nature of things, be ill cultivated, and the national interest consequently suffer.

The explanations I have given of the wine system in France will be received, I trust, with candour. To investigate such questions fully, would demand dissertations expressly written on every subject that arises, which would be inconsistent with the brevity necessary to the register of travels: I attempt no more than to arrange the facts procured; it belongs to the political arithmetician fully to combine and illustrate them.

CHAP. XI.

Of the Culture of Silk in France.

QUERCY.—Caussade.—**I**N the avenue leading to this town, two rows of the trees are mulberries, and these are the first we have seen.

Montauban.—Many mulberries here, in rows; and under some of them four rows of vines, and then six or seven-times the breadth of corn. When the leaves are not in time for the worms, or are destroyed by frosts, they are fed with lettuce leaves; and if no lettuce, with cabbage, but the silk is so worthless, that the failure is reckoned nearly equal to having none at all.

Toulouse to Noé.—Mulberry trees are here worth from 6*s.* to 20*s.* and 30*s.* each per annum, according to their size.

Noé.—Mulberries worth up to 3 *liv.* per tree, per annum. But silk worms have missed much for three years past.

Narbonne.—Many mulberries; all with pruned flat heads.

Pinjean.

Pinjean.—Olives are a beneficial article of culture, but they prefer mulberries, because they yield a crop every year. On four sétérées of land they have sixty trees; and at the same time the land yields barley or oats, mown for forage, of which the four sétérées give 60 quintals, that sell at 33*s.* the quintal. Single mulberries have paid as far as two louis each, and many one louis. If four sétérées equal two acres, there are thirty trees on an acre, and the acreable produce of forage will be 52 liv. or 2*l.* 5*s.* 6*d.*

Nismes to Sauve.—Seven mulberries on an English rood.

Quésac.—Mulberry leaves sell commonly at 3 liv. the quintal. A tree yields from one to eleven quintals: two, three, and four are common. Gathering the leaves costs 12*s.* the quintal. Fifteen quintals of leaves are necessary for one ounce of *grain* (the seed or eggs of the worm): 20 liv. the mean price of silk per lb.: reckon that an olive-tree pays as well as a mulberry.

Many mulberries about Quésac, and some on very poor dry land. In grass fields the ground is kept dug around them, as far as the branches extend. Remark some stones laid around many trees, for some distance from the stem.

Eight trees in something less than an English rood.

By information, almonds, in Rouverge, pay better than mulberries, and with much less expence and attention; 3, 4, 5, and 6 liv. a tree.

Gange.—Many fine mulberries about this place, which yield from 3 liv. to 8 liv. a tree in common, young ones excluded. They yield to twelve quintals of leaves; in general, three, four, or five. The price varies from 3 liv. to 10 liv. the quintal. They are much more valuable than olives. This year the great cold in April destroyed the young buds, and hurt the crop greatly. They never think of giving any thing to worms but the leaves; have heard of twenty things, but treat the idea with the greatest contempt, knowing as they do, by the fabric, the worthlessness of silk, if the worms are so fed.

Lodeve.—Mulberries are more profitable than olives; yield, three, four, and five quintals of leaves, which sell, in common, at 3 liv.

Mirepoix.—Mulberries are here, but none after, in going from Carcassonne to St. Martory.

Auch.—A few mulberries near the town.

It is here to be noted, that from Mirepoix to Bagnere de Luchon, and from thence by Pau to Bayonne, and back by Dax to Auch, a line of much more than 300 miles, I saw no mulberry trees.

GUIENNE.—*Leyrac.*—Some few mulberries.

Aiguillon.—A few trees for some miles before this place. Behind the chateau, in the town, is a large plantation, formed by the late duke; which, being in the fine vale of the Garonne, the land is cultivated as the rest, under hemp and

wheat ; but both those crops are less than middling, the expression of the person who gave us the information, on account of the roots and shade of the trees. The duke gives the leaves to the people in the town, furnishing also the wood, boards, grain, and whatever else is necessary for the business, and he has in return the third part of the filk they make. Every one in the place, and all round the country, say that he loses considerably by it ; asserting, that the land thus occupied is worth 500 louis a year ; that the crop of filk is so precarious that he has had eight quintals, and in other years only three, two, and even one ; so that on an average, his third part gives only 150 louis, and the crops under the trees cannot make up one-half of the deficiency. They also maintain, that the land is too rich for mulberries ; and, to prove that they are right in their ideas, they quoted many gentlemen in the neighbourhood, who have grubbed up their mulberries.

Tours.—They have in the neighbourhood of this city many mulberries, inasmuch, that the value of the raw filk has amounted, as they assert, in a good year, to a million of livres. I walked several times into the country to view the trees and make inquiries. Many of the corn fields are regularly planted all over : the gardens are surrounded with them ; and the roads and lanes have rows of them. The large good trees, in a favourable year, give to the value of 4 liv. but not in common. I viewed several plantations ; containing, old, young, good, and bad, that gave on an average, one with another, 30*l.* which seemed, from various accounts, to be a general medium ; it, however, excludes very bad years ; such, for instance, as last spring, in which they had no crop at all, the frosts in April (note, this is certainly one of the finest climates in France) having entirely destroyed it. I saw several trees which gave to the amount of 10*l.* to 15*l.* at ten years old, and 30*l.* at the age of fifteen years. Plants, at two years old, are sold at 3 liv. the hundred : at three years old, 4 liv. : and good trees, proper to plant out in an arable field, 20*l.* each. In regard to the distance, at which the trees are planted, they have no general rule. I measured many distances, in a large corn field, and found them at two rod square, at an average : in another they were six yards by nine ; which trees gave 40*l.* on a medium : round a garden they were at five yards from tree to tree : a field, entirely cropped with mulberries, had them in rows at one and a half rod ; and between the rows another of small plants, in the manner of a hedge. If sixty square yards are allowed per tree, there will be eighty on an acre, and if they give 30*l.* each, it will amount to the vast produce of 5*l.* per acre, besides what can be gained under them ; it would, however, be a question, whether this under-crop would make up for bad years, that yield nothing ? Around fields, in roads, corners, &c. the profit will be greater. It is remarkable,

able, however, that with all this profit attending them, they do not increase about Tours, yet not one acre in an hundred adapted to the culture, is so employed, which shews either a very uncommon want of capital, or doubts whether the cultivation is so profitable as it appears to be from such information.

In order to spread the cultivation, government established nurseries, and gave the trees gratis, until private nurseries were opened; and in winding the filk much assistance was also given to the loss to government, of 20*s.* per lb.; but now the business is carried on without any premium of that sort. Probably such encouragements were of very little use; the abuses incident to all governments would direct such assistance to be given where it was not wanted; and in that case it would, by raising disgust, do mischief.

They plant no mulberry but the white; the black they think very bad.

NORMANDIE.—*Bizy*.—Having read, in the Memoirs of some of the Agriculture Societies in France, that the marshal duke de Belleisle made a very considerable and successful experiment on the introduction of the culture of filk in Normandy, on his estate, at Bizy, I had long ago made a note of it, for examining, as the steps which proved successful in such an attempt in Normandy, might probably have the same effect, if applied in a climate so similar as that of England. I went to Bizy with this view, and did what I could to find out the proper persons, concerned in this undertaking, to give me the information that was necessary.

Five-and-thirty years ago, the duke began by making some extensive plantations of mulberries, to the amount of many thousand trees: they succeeded well; and, in order to draw all the advantage possible from them, as the people in the neighbourhood were ignorant and awkward in the process, the duke, by means of a friend in Provence, procured a man, his wife, and all his children, well skilled in the whole business of the filk-worm, and established them at Bizy, in order to instruct his own people in it. By these means, he made as much filk as the produce of leaves would admit. I wished to know to what amount, but could not ascertain it; but the duke continued his plantations of mulberries during nine or ten years. I tried hard to find out some descendant or remains of this Provençal family, but in vain; the man was dead, the woman gone, and the children dispersed; the estate, on the marshal's death, having been sold, and coming into the possession of the duke de Penthièvre, made all these circumstances the more difficult. The great object was, the success of the experiment; this inquiry was uniformly answered by several persons:—it had no success at all. It was a favourite project of the Duke's; and supported, with perseverance, for many years, until his death; but the filk did not pay charges: and though he very liberally

berally offered leaves to the poor people, on easier terms than they are supplied with them in the south of France, and even gave trees; yet nothing more was done than what his influence and authority forced: and the Provençal family, after ten years experience, pronounced that the climate would do to make silk, but not with profit. To his last hour, the duke had silk made, but not an hour longer; the practice had taken no root: the country people, by whom alone such an undertaking could prosper, saw no inducement to go into the scheme, and the whole fell at once into utter ruin and neglect on the duke's death; so that the trees themselves were by degrees condemned, and the number remaining at present inconsiderable. Certainly no positive physical proof, that silk will not do in Normandy, but it is a presumptive one, pretty strongly featured. Go into Languedoc, Dauphiné, and Provence, and the poor people do not want the exertions of marshals of France to induce them to breed silk worms; they have a much more powerful inducement,—the experience that it is their interest; had this inducement been present at Bizy, the culture would, in more than ten years, have taken root.

BOURBONNOIS.—*Moulins*.—Mons. Martin, gardener of the Royal Nursery here, who is from Languedoc, cultivates silk with great success; he was so obliging as to be as communicative as I could wish. Trees of two or three years old, yield a few leaves, but to be stripped cautiously: at eight to ten years, they come very well into yielding. One ounce of *grains*, that is, of the eggs of the worm, requires twenty quintals (one hundred weight English) of leaves, and yields from 7 lb. to 9 lb. of silk. He has made as far as 300 lb. in a year, the produce of 3000 lb. of cocoons; and the worms that year eat 12,000 lb. of leaves every day, for four or five days together, and fifty persons were employed for eight days. The whole business of hatching and feeding employs a month; the winding is afterwards done at leisure. For care and attendance of the worms, gathering the leaves, and winding the silk, he gives one-fourth of the produce, or about 6 liv. the pound of silk; for spinning 3 liv.; in all, 9 liv.; rests profit, 15 liv. The men earn 20s. to 24s. a day, and the women 8s. to 10s. He prefers this climate for the business to that of Languedoc, though stoves are here necessary for keeping the room to the temperature of 18 degrees, Reaumur; whereas in Languedoc they do without fires. The season here varies from fifteen to twenty days; the earliest is the 24th of April, and the latest the 15th of May. If the leaves are not ready, he keeps the hatching back, by lodging the grains in a cool cellar. He has known one tree in Languedoc yield 80 liv. a year in silk. Moulins and its environs make to the value of 60 or 80,000 liv. a year. Mons. Martin sells trees, of two years old, at 20 liv. the thousand. The distance of planting, if for crops, under the trees, thirty feet;
if

if no crops, twenty feet. Of the writers that have treated of this subject, he prefers Monf. Sauvages.

In the particulars of an estate to be sold, was one article relative to the product of silk; mulberries enough for 12 oz. of grain, yielding 60 lb. of silk.

VIVARAIS.—*Maiffe to Tbuys*.—First meet with mulberries in going south from Auvergne. They yield very largely here; I am assured, that many trees, in a good year, reach 12 liv. each. That in four years after planting, they begin to produce leaves enough for stripping. The best of them are all grafted. Trees, fifteen years after planting, have, in a very good year, yielded 6 liv. I was shewn a small field that yields, one year with another, 120 liv.; I stepped, and found it 50 yards by 70 yards, or 3500 square yards (7l. 4s. 4d. per English acre); yet the trees were not regularly planted, nor fully; and this besides the other produce of the ground.

Aubenas.—The silk mills here, which are considerable, purchase the cocoons of the farmer, at 28s. to 32s. the pound. The mulberry-trees here are very large.

Villeneuve de Bergue.—Twenty quintals of leaves give one quintal of cocoons, and one quintal of cocoons 10 lb. of silk. They reckon that the waste, *débris & dechet*, pay the spinning. Eighteen trees, of seven years age, pay 28 liv. a year; but some trees, of ten years old, have been known to give 3 liv. each. Three-fourths of an arpent de Paris have been sold for 400 liv.; the soil all rock and stone, but calcareous. The trees are grafted before transplantation, which is at three years old. Price, 12s. and 15s. each. The second year after planting they begin to gather. The price of the leaves 3 liv. the 100 lb.; and of gathering 10s. the quintal. The culture is reckoned more profitable than vines, which are sometimes grubbed up, to make way for mulberries. Of the sorts, the *rose feuille* is best. In the road to Viviers, I remarked a tree 2½ feet in diameter; and very large ones are in the bed of a torrent, where no earth (only stones) is visible.

DAUPHINE.—*Montélimart*.—Silk is the great produce of the country; they have mills, where the cocoons are bought, at 27s. the pound. An ounce of *grains* gives 60 lb. of cocoons, and 12 lb. of cocoons 1 lb. of silk: forty middling trees, each yielding a quintal of leaves, being required to feed that proportion of worms. The grains is hatched by artificial heat, and the operation demands wood to the amount of 24 liv. to each ounce of grains. A common method of conducting the business is, for the proprietor of the land to find trees and half the grains; the poor people the other half and all the labour; and the parties divide the produce between them. The impediments in the culture are, —1. climate; frosts in the spring destroy the leaves, and, if at a critical time, there is no remedy. I demanded if they had no succedaneum, in such case, in feeding

feeding the worms with the leaves of some other plants? The answer was, that experiments had been made upon that point, without any success; that the idea, however, was nonsense, for the quantity of food was so great, as to render it absurd to think of providing it, not for a certain want, but merely a contingent one; the expence of such a conduct would absorb all the profit. Nor is it frosts only that are dreaded—great and sudden heats make the worms fall, and they labour very poorly.—2. The extreme labour of attending the worms, is a great objection to the business; it is, for the last fifteen days, so severe, as to kill many; and, for the last eight days, they are cleaned every day.

Upon a comparison of the culture of the olive and the mulberry, it was remarked to me, that one great advantage of the olive, was the contracted space in which the roots feed, consisting chiefly of a tap root and fibres, which made the crops sown under them good; but a mulberry threw out a profusion of roots, fifteen or twenty feet around, in every direction.

They have been known, at eleven years growth, to yield 200lb. of leaves each tree.

The mulberry is found not to like water; for there is in the watered meadows a mound of earth, to keep the water from the roots of these trees.

When silk-worms are ready to spin the cocoon, if they are cut in halves and thrown into vinegar, each worm gives two transparent ligaments, very strong, for making fishing lines, &c. &c.

Loriol.—Mons. L'Abbé Berenger, curé of this place, has given an uncommon attention to this culture; he was so obliging as to give me the result of many years experience on this interesting subject.

Time of Sowing.—There are two seasons; the first, with the fruit, fresh, at the end of June:—the second in May, with the seed of last year, dry; and this is better, because the June sowing suffers sometimes, if frosts are severe, or the weather is both cold and humid. When sown dry, if too early and cold weather succeeds, they are apt to fail. They are often watered.

Transplantation.—In April following, those that were sown in May are transplanted, three feet every way, into the nursery; only half the plants (the best) being drawn, the rest are left till the year after. They are never transplanted a second time.

Sort.—The *feuille rose*, with white or grey fruit, is the best; black fruit not known here, but said to be good for leafing late, and escaping frosts in the spring.

Grafting.—It is best to graft, in the nursery, in May, when they are three years old, at the head, with grafts cut in February preceding, and preserved in sand in a cellar: these grafts are branches three feet long, which are buried in sand, except four inches at the end, for three or four knots to shoot; if all
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are buried in the sand, all the knots will shoot. At grafting cut off those knots that have shot out, and use the rest. The time is after gathering the leaves of the standard to be grafted, when the plants are 5 feet, or $5\frac{1}{2}$ feet high. One year after grafting transplant, that is, about April. Graft three or four branches.

Soil.—Good and humid sands, and sandy loams are the best: warm, forward, rich, and friable: rocky and stoney soils do well; but all clays are bad. On the lightest stoney lands, the trees come into bearing much sooner than in the rich vale, but these last vastly longer; on the rich vale land, two hundred years are a common age for them.

Planting.—In bad land plant at eighteen feet square, in moderate at twenty-four, and in very good at thirty-six; and, after seven or eight years, there can be no crops under them, if at these distances. There are two sorts of trees, the one large standards; and the others dwarf ones, which they call *murier nain*; an arpent contains, of course, many more in number of these than of the others; and they yield, for the first ten or fifteen years, a larger produce, but afterwards the greater trees are more productive. The dwarfs are best for being set in rows, for ploughing between; they are grafted at $1\frac{1}{2}$ feet high; are never watered. The price of trees 25*s.* the hundred, at the age of one or two years; the great trees, at four or five years, for grafting, 20*s.* each, at present 15*s.* each, and grafted. The operation of planting is performed by digging a hole 6 feet square, and $2\frac{1}{2}$ or 3 feet deep; and they commonly lay dung upon the roots.

Cultivation.—The attention with which they manage the trees after planting, merits the highest commendation:—after they have been planted two years, a trench is dug around each tree, about two feet deep, which is left open all winter, and filled up again in the spring; the year following another is dug, more removed from the tree, which is managed in the same manner; and so on every year a trench, till the whole land is stirred as far as the roots extend. This appears to be a most excellent system, and preferable to trenching the ground at first; as in that way much of it is consolidated again, before the roots of the young trees reach it.

No crops whatever to be sown on the land after the trees are of a size to have their leaves gathered; as much is lost in leaves as is gained by such crops.

The trees should never be pruned at any other season than March, and but once in two years; the wood pays the expence: they receive one digging per annum, at 6 liv. and a hoeing, at 3 liv. per arpent.

There is another admirable practice known here, and used by all skilful cultivators, which is, that of washing the stems of the trees every year, in May,

for four or five years after planting. Mons. L'Abbé Berenger always practises this with great success.

Produce.—For the benefit of the young trees, they ought not to be stripped for seven or eight years after planting into the field; they will pay well afterwards for this forbearance; but the practice is not common. I viewed a young plantation of Mons. Blancard, at present in the National Assembly, who is famous for his attention to his mulberries; the trees were six, seven, and eight years old, and none of them had ever been stripped, and their appearance was very flourishing. Mons. L'Abbé Berenger approves the practice, but has not adhered to it; his trees, however, are very fine, and do not complain; one plantation, of eight or ten years growth, that have constantly been stripped, are, notwithstanding, very fine. There are forty, on 400 toises of land, that this year produced, each tree, 8 lb. of leaves. The beginning of February he planted the land under them with potatoes, which were dug in August, and produced 40 quintals; among these potatoes maiz was planted in April, in squares of five or six feet, and the produce of that will be five or six quintals, at 8 liv. the quintal. He shewed me another plantation, of an arpent, of very fine and flourishing dwarf trees, which yielded this year 8 lb. of leaves each tree, and 300 lb. on the arpent. They are ten years old; no crops have ever been sown under them.

The produce of leaves may be estimated at 50 lb. from a tree of a toise square. The greatest produce known is 10 quintals, from a tree of fifty years old. At twenty years the medium is two quintals. They increase till sixty years old; but are in good perfection at twenty.

The eggs.—A paper of nine inches by fifteen inches, covered with small leaves, stuck full of worms, gives one quintal of cocoons; and this is what they call one ounce of *grains*. But proportions will not hold, for the produce is not increased proportionably to an increase of quantity.

Hatching.—Retarding the hatching of the worms with particular views, is, in many circumstances, impossible. When once the heat of the atmosphere is come to a certain pitch, the hatching cannot be retarded by cellars. Mons. Faujas remarked, that in June they would hatch in an ice-house; which shews, that at a certain age they will hatch in spite of cold. They never, however, trust to the natural heat for hatching them, which always does it too slowly; it is done with the assistance of fire, and in the month of May. They begin to hatch at 20 to 22 degrees (Reaumur); but artificially it is done at 24 degrees. When the eggs happen to have been put in a cellar, at 10 degrees, their common temperature, they afterwards hatch with difficulty, and never well; always best when they have to undergo but a moderate change.

Feeding.

Feeding.—In this business all sorts of food, except the mulberry-leaf, is rejected, at the first mention, as the most ridiculous, impracticable, and impossible idea, that ever entered the head of a visionary; and never could be conceived but by those only who amuse themselves with a few worms, without taking the trouble of calculating quantity, expence, and quality of silk.

For one ounce of grain, a room of 10 feet by 14 feet, and 12 feet high, is necessary; but the larger the better, and with windows only to the north. There should be ten tables, or shelves, 6 feet long, and $4\frac{1}{2}$ feet broad, one 18 inches above another; the first expence of which 60 liv.

Till the 18th of April there is here no security against frosts. Two years ago there were many leaves before that day, and most people began their operations; the leaves were all cut off, and they lost the year entirely, for it is three weeks before the leaves come again. Mons. L'Abbé Berenger would not trust appearances; did not begin till after that day, and had as good a year as at any other time.

The expences are usually borne between the parties, and amount to half the produce, not including the keeping the utensils in repair. But if they are paid by the owner of the mulberries, some of them amount to as follow:—gathering the leaves, 12s. to 15s. the quintal; for gathering the dwarfs, only half the price of the others; wood, 15 liv. for 1, 2, or 3 oz. of eggs in one room; 30 liv. for 6 oz. because in two rooms; 22 liv. 10s. for labour in the house; spinning, 40s. per lb. of silk. The waste is worth 20s. therefore the expence is 20s.

For the last four or five days, eight men are necessary to gather leaves for 20 oz. of grain, their voracity being incredible the latter part of the time.

The price of the leaves, if bought, is 4 liv. to 5 liv. the quintal, never at 3 liv. but has been at 10 liv. From 15 to 18 quintals of leaves give one quintal of cocoons, and one of cocoons gives 9 lb. of silk. Cocoons are sold at 26s. the pound; silk, on an average, at 19 liv. The leaves, dissected by the worms, are dried, and kept for hogs, sheep, &c. being worth 4 liv. the quintal; and an ounce of grain yields two quintals of such: and the dung of the worms, from an ounce, is worth 4 liv. more, being excellent; the best indeed of all others.

Two brothers here, Messrs. Cartiers have had as far as 80 quintals of cocoons. Mons. Berenger's three hundred trees on an arpent, at 8 lb. of leaves each, are 24 quintals; and, at 4 liv. the quintal, amount to 96 liv.; and as 16 quintals of leaves give 9 lb. of silk, at 19 liv. it is 171 liv. and for 24 quintals 256 liv. the half of which is 128 liv.; hence, therefore, to sell the leaves at 4 liv. the quintal, does not answer equally with half the produce (128 liv. per arpent de Paris, is 6l. 4s. 3d. per English acre).

PROVENCE.—Avignon.—At ten years growth the mulberries yield a considerable produce; at that age they give 100 lb. to 150 lb. of leaves, but not

common. For one ounce of grain, five or six very large trees are necessary; or, if the leaves are bought, to the amount of 24 liv. to 30 liv. The ounce will give from 40 lb. to 50 lb. of cocoons, or 5 lb. of filk; but more commonly 12 lb. of cocoons for 1 lb. of filk. Gathering the leaves, 10*s.* or 12*s.* the quintal, one with another, dwarfs and standards. The waste pays the spinning.

Aix.—Mulberries, beyond all comparison, more profitable than olives; will give 3 liv. or 4 liv. per tree, more regularly than olives will 10*s.*; but the great plantations of olives are on barren rocks that will not do for mulberries.

Tour d'Aigues.—One ounce of grain requires 15 quintals of leaves, and gives 50 lb. of cocoons; that is, 50 lb. in a small undertaking, like the house of a poor family; but not more than 30 lb. in a large building. Monsr. the President has, however, had 75 oz. of grain that gave 40 lb. one with another: 14 lb. of cocoons give 1 lb. of organzine filk.

On good land, twenty trees, of ten years old, will give 15 quintals of leaves. The waste, with the addition of 10*s.* per lb. will pay the spinning. Wood is 12*s.* the quintal, and 1½ quintal will wind and spin 1 lb. of filk; and one quintal of charcoal will make 3 lb. of filk. The common calculation is 10 quintals of charcoal for 1 oz. of grain.

Labour and fuel, 40*s.* per lb. of filk, exclusive of gathering the leaves; but the common method is to find the trees and the grain, and give half the produce for all the rest. The whole business, exclusive of winding and spinning, employs exactly a month.

Hyeres.—This article is here but little regarded; the number is not considerable, nor do they pay nearly the same attention to them as in Dauphiné. A tree of twenty years pays about 30*s.*; and some, of a very great size and age, 6 liv.

Frejus.—Close without the town, on the banks of a small canal of irrigation, are five or six of the largest mulberries I have seen, growing close to the water's edge; from which it should appear, that they have here none of that objection to water which was mentioned to me at Montélimart.

Estrelles.—At the inn here there is a mulberry-tree which yields black fruit, and leaves of a remarkable size. I asked the master, if he used them for silk-worms? Never, he replied, *they are no better for them than elm, oak, or pine leaves: it is the white mulberries that are for worms.* So inaccurately understood is this point, even in the silk countries; for in Languedoc they told me, all sorts were given indiscriminately. This tree would be worth 2 or 3 louis a year.

To these notes, taken by myself, I shall add a few others, for the more general elucidation of the subject.

Languedoc

Languedoc yields, in a common year, from 500 to 1200 quintals of silk*. I have searched books in vain for information of the quantity of silk produced in all France; but I find the number of looms which work it, by one account, 29,000†, of which 18,000 at Lyons; but by a later, and more authentic account, there were at Lyons only 9335 looms, which worked about 2,000,000 lb.‡ and in all France 17,500 looms; which, in the same proportion, would work about 3,763,000 lb. In 1784, she imported raw silk to the value of 29,500,000 liv. and in 1787, to 28,220,000 liv.; call it 29 millions, and 20 liv. the mean price per lb. it is 1,450,000 lb. ||; which will leave about 2,310,000 lb. for the home produce, or 46,200,000 liv. which is so gross an impossibility, as to ascertain to a certainty, the exaggeration of the number of looms, and confirms, in a fresh instance, the many errors in the new Encyclopædia. If Languedoc produces only 100,000 lb. all the rest of the kingdom cannot produce twenty times as much; for the culture is confined to three or four provinces, except small quantities, that enter for little in a general account. I was informed, at Lyons, that the home growth was about a million of pounds weight, of two-thirds of the value of the imported per lb. or about 20 liv. This makes the growth to the value of 20,000,000 liv. or 875,000 l. If so, Languedoc must produce more than 100,000 lb. for that province must be at least one-fourth, if not one-third of the whole. I must confess I have my doubts upon this point, and think that even one million of pounds much exaggerated, for I crossed the silk country in more than one direction, and the quantity of trees appeared inconsiderable for any such produce. But admitting the authority, and stating that the kingdom does produce to the amount of 8 or 900,000 l. sterling, I must remark, that the quantity is strangely inconsiderable, and seems to mark, that the climate has something in it vastly inferior to that of Italy, for the production of this commodity; in which country there are little principalities that give more than the whole kingdom of France;—yet, to human feelings, there is no comparison between the climate of France and that of Italy; the former is better, beyond all question. But the spring frosts (found in Italy also) are what bring the greatest destruction on this culture, and will for ever retard its progress greatly in countries exposed to them. In 1788, there was a general failure in the south of France, yet across the Pyrenees, in Catalonia, the crop was abundant, merely because the spring frosts did not pass those mountains.

* *Considerations sur le Commerce de Bretagne*, par Mons. Pinczon du Sel des Mons. 12mo. p. 5.

† *Lettre sur les Muriers & Vers a soie Journal Oeconomique*, 1756, vol. ii. p. 36.

‡ *Encyclop. Methodique Manuf.* tom. ii. pt. 2. p. 44.

|| A very late writer was strangely mistaken, in saying, that France imports 20,000,000 of pounds weight. *Mr. Townshend's Journey through Spain*, vol. i. p. 52.

In the districts and spots of the southern provinces, where the climate has, from experience, been found favourable to silk, there is no want of exertion in following it; and about Lorient and Montelimart, it is cultivated with more energy than in any part of Lombardy, yet at small distances there are no mulberries, though the proprietors are as rich and as industrious as where they are found. The same observation is to be made every where, and seems to mark a great dependence even on the locality of climate, if I may hazard such an expression. Where the culture succeeds well, it appears, from the preceding minutes, to be highly profitable, and to form one of the most beneficial objects that can attract the attention of the industrious.

The Society of Arts at London, have, for many years, offered premiums for mulberries and silk in England; and much has been written and argued in favour of the scheme, which I take to be a great, but harmless folly: it may mislead and deceive a few ingenious speculative people, who may, for what I know, in the course of a century, arrive at such success as the late King of Prussia boasted, that of making a few thousand pounds of miserably bad silk, after forty years exertion. Such success is a real loss; for the same attention, time, capital, and encouragement, given to productions natural to the climate, would have made twenty times, perhaps an hundred times, the return. That silk may be made in England I have no doubt; but it will be made on the same principles, and attended by the same dead loss. The duke of Belleisle made silk, in Normandy, and if he had been a great sovereign, his hundreds would have been thousands of pounds; but all was loss, and, therefore, the sooner it dropped the better. Another duke failed, not quite so much, in the Angoumois; and a third planted mulberries to loss on the Garonne; his neighbours did the same, but grubbed them up again because they did not answer. At Tours, the finest climate of France for fruits, and by consequence well adapted for mulberries, they succeed tolerably, but the culture does not increase, which carries with it a presumption, that more steady heat in spring is wanted than the northern provinces of France enjoy. Such circumstances bear with great force against any ideas of silk in England, where the heat is never steady; and least of all in spring; where late frosts cut off vegetables much hardier than the mulberry, even so late as the end of May and beginning of June; and where I have seen potatoes turned black by them, even on Midsummer day.

The minutes are invariably decisive, on the question of feeding worms with any thing but mulberry leaves; the utter impracticability of that scheme is shown in a manner too satisfactory for any doubts to remain; and the difficulty of retarding the hatching of the worms beyond a certain period, though not proved with equal decision, is yet placed in a light not a little questionable. It is upon these two modifications of the common practice, that silk in England confessedly depends;

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one of them is a vague groundless theory; and the other too uncertain to be relied on. But I must further remark, that frosts, in such a climate as England, as well as abroad, are to be looked for *after* the leafing of the mulberry; and consequently, that the power of retarding the hatching of the eggs would be useless; the worms in that case must be put upon other food, which, with small parcels, would make bad silk, and with large ones would demand an expence impossible to submit to every year for a mere contingency that might be demanded only once in three or four. To urge the example of Brandenbourg is idle: in the first place, all continental climates are more regular than insular ones, and therefore the climate of the King of Prussia's dominions may be better for the business; yet with this advantage Normandy failed. In 1788, that is, after forty years exertion, they made, in all the Prussian territories, 11,000 lb. * of pounds lighter than French ones. And the author I quote on this subject, who commends the project, informs us, that in Brandenbourg, to make a pound of silk, demands one-fourth more cocoons than in the south of France †; and that the silk thus made, is so bad, that it will do only for certain objects ‡; of the climate he says, that it is not favourable enough § for the business. What encouragement is to be collected from this detail, when it is considered that forty years effort of the first talents in the world, seconded by boundless power, forcing plantations and lavishing premiums, have been able to drive this nail, that will not go but against nature, to no greater extent than 11,000 lb. of bad silk in all the Prussian dominions? In my opinion, the result of such an experiment yields a more complete condemnation, than if it had never been tried at all in such a climate, and ought to be a lesson to us in England, not obstinately to persist in such foolish attempts, calculated only to bring ridicule on societies, and disappointment to individuals. In all probability, the silk made in Prussia costs every year ten times more than it is worth; that is to say, the same royal attention, the same premiums, the same favours, as giving trees and silk eggs,—the same powerful instigations to rectors and cureés of the crown livings, &c.—had they been exerted to people the heaths of Brandenbourg with sheep, would have yielded, in *wool alone*, ten times the value of 11,000 lb. of silk; which, if we value it 12s. a pound, being so inferior, amounts only to 6600l.;—a pretty article of produce for forty years efforts of the most energetic government in Europe! 50,000 sheep, at 3s. a head in wool, go much beyond it, throwing mutton out of the question.

An idle error in England, is the idea that this culture demands the labour only of women and children, and old and infirm persons: the contrary appears

* *Mirabeau Monarch. Pruss.* tom. i. p. 180.

† *Tom. ii. p. 166.*

‡ *Tom. i. p. 180.*

§ *Tom. ii. p. 166.*

the fact; eight men are necessary for gathering the leaves for twenty ounces of grain, during four or five days, when the worms are most ravenous: and the work of gathering is that of men at all times; for the leaves are not *picked*, but *stripped* along a branch, by force and hardness of hand. And even the feeding and cleaning worms is so far from being light work, that it is, on the contrary, very severe, so as even to kill some of the poor people that follow it up; as the industrious will follow up all work severely. The culture is therefore very far from what it has been represented in England, as being all net profit, demanding only women, children, and the infirm; on the contrary, it would demand many able men, at a busy season of the year, when they could be ill spared; and if a proposal was to be made at such a season to a farmer, that he must spare men enough to gather all the leaves of many hundred of pollard trees of any sort, he would probably say the price of mulberry leaves in the silk countries would not pay him; and that double that price would not be an inducement to him, at such a season, to derange his business, and take his men from necessary work, for employing them on such a business. If it is asked, how the same thing can be done in the silk countries? I answer, that labour is but half the price of English labour, owing to causes explained in other chapters; that the multiplied subdivision of landed property fills many of those countries with hands,—many idle, and many not half employed. To them the culture is highly valuable; but to introduce it in a country, even if the climate would permit, constituted and politically arranged, in a manner and upon principles absolutely contrary, would be attended with difficulties and expences, not in the contemplation of people very ingenious, perhaps, who have amused themselves with silk-worms, and paid an attention to them, being a pleasure, which, if commercially valued, would possibly amount to fifty times the value of all the silk they make.

CHAP. XII.

Of Cattle in France.

EVERY part of agriculture depends so immediately on the quantity of live stock, that a farming traveller cannot give too much attention to so material a part of his pursuit. The candid reader will not, however, look to any traveller, that does not reside long in a place, for such information, as is alone to be acquired by such residence. He who stays a week will gain knowledge beyond the attainment of a day; and the attention of a month will produce fruits beyond the reach of him whose observations are limited to a week, and yet remain very superficial, when compared with the researches of others who live on the spot. A mere traveller should gain what his opportunities allow, and what he is thus able to gain is not the less valuable, because larger powers would have commanded a greater harvest.

PAYS DE BEAUCE.—*Toury, &c.*—Their best cows sell at 150 liv.; they give twelve or thirteen bottles a day.

Orleans.—They have a remarkable custom of letting chick-weed get a head in their vineyards, which they pluck in May and dry. This they boil in water with bran for their cows, giving it thrice a day, and find that it makes them give double the quantity of milk they would do on any other food. This application of a common plant, that might easily be cultivated, and got off time enough for a crop of turnips, probably improving the land, deserves a trial. The fact is curious.

SOLOGNE.—*To La Ferté.*—Make hay of the weeds of their vineyards, and are the chief support of their cows; do not boil, but give them in bran and water. In summer feed with grass and vine cuttings.—A cow, that gives one to three bottles a day, sells at 90 liv.

La Fuzelier.—The cows small, and very like Alderneys. Plough bullocks of the same breed.

BERRY.—*Verfon.*—A pair of oxen, ready to work, sells at 400 liv. (17l. 10s.), and when old and past labour, but lean, 300 to 340 liv.

Argentan.—A good pair of oxen sell at 400 liv.; common ones 300 liv.; very fine to 600 liv. (26l. 5s.) All the cattle here are cream coloured, as well as the droves we have met going to Paris.—A cow, not the largest, sells at 150 liv. (6l. 11s. 3d.)

LA MARCHE.—*To Boismandé*.—Very fine bullocks, well made, and in great order, 600 liv. (26l. 5s.) the pair. These oxen are of a beautiful form; their backs strait and flat, with a fine springing rib; clean throat and leg; felt well; and are in every respect superior to many breeds we have in England.

La Ville Aubrun.—Work their cows, but they do not give as much milk as if not worked. A good one sells, with its calf, at 150 liv. (6l. 11s. 3d.) They fatten oxen here with *raves*, a sort of turnip; begin to use them in October or November, and last generally about three months. To fatten a pair of good oxen would take 45 cart loads, cut in pieces, and 20 quintals of hay: when the raves are done, they give the flour of rye or other corn, with water enough added to form a paste; this they leave four or five days to become sour, and then they dilute it with water, thicken it with cut chaff, and give it to the oxen thrice a day; when fed with raves the oxen do not want to drink. Such a detail would imply a turnip culture of some importance, but though hoeing is not absolutely unknown, yet the turnips may be conjectured, from the common management, being never to hoe, fearing to cut up the crop by it. The young plant is sometimes eaten by the fly, in which case they sow again; frost sometimes damages the roots, but never destroys them entirely. Often sow wheat after them, and do not cultivate clover; thus three-fourths of the merit of the culture is lost.

Bassie.—Their raves yield, according to the year, two or three cart loads per boiserée of land, about eight of which make an English acre. A pair of good oxen will eat a cart load in two days, but have hay with them: they are as fond of this root as horses are of oats: they finish with flour of rye, mixed as before-mentioned: they assert that the oxen like it the better for being sour, and that it answers better in fattening them. They eat about a boiseau a day (weighs 22 lb.) and never give this acid liquor without chopped hay. It is proper here to remark, that, in coming from Paris, we have met a great many droves of these oxen, to the amount I guess of from twelve to fifteen hundred, and that they were, with few exceptions, very fat; and, considering the season, May, the most difficult of the year, they were fatter than oxen are commonly seen in England, in the spring. I handled many scores of them, and found them an excellent breed, and very well fattened.

LIMOUSIN.—*To Limoges*.—A pair of good oxen will eat a cart load of raves a day; begin to feed the end of October: after the raves, give rye-paste as described above, but with the addition of a *leven* (*levain*) to the paste, to quicken the fermentation and make it quite sour: at first the oxen will not drink it, but they are starved to it; usually take it the second day, and after they have begun like it much and never leave a drop. Saw a pair bought last winter for 1100 liv. (48l. 2s. 6d.); but such as are ready for work, sell as dear as fat ones, which is remarkable. An arpent of raves yields forty cart loads; and a pair of good oxen will

will eat one load a day. They have two kinds; one very large and flat; the other more round, and with a root that enters the ground deeply. They generally manure thoroughly for them, in March, and plough in so early, that the dung may be quite rotten and mixed with the soil by the end of June. Begin to sow a fortnight after Midsummer: they are not hurt by the frost when it thaws with rain, but are apt to rot when it thaws with the sun. About Christmas they plough up the part eaten, and sow rye, the rest for oats.—They plough their cows, milking them once a day, from three to five bottles.

Limoges.—The great staple of the whole province is fat cattle, sent to Paris and other towns, as well as hogs, that go for salting to the sea ports. The cattle are all of a yellow cream-colour, with no other distinction than having, one in an hundred perhaps, a tendency to a blood red: all have horns of a medium length; legs short in proportion to their carcasses, which are deep and heavy; the shape in general very good; the back strait and broad; the rib springing, and consequently well arched; the hips and rumps very fat; the tail rising high from the rump; which I note, not because such points are of *real* importance, but because it is esteemed by some as a proof of a bad breed: the weight I guess to be from sixty to seventy stone (14 lb.), some rise to eighty, and a very few may be so low as fifty. Their hogs are many of them large; some with lop ears like our old Shropshire's.

St. George.—The same breed of oxen continues here, but hardly so large; they are always kept in high order: a pair draws the weight commonly of 2000 lb. and supports such labour well. They rear calves by keeping them eight or ten months with the cows.

Usarch.—Fatten their oxen with raves, as above, and then with rye-flour, made into a paste with leaven, and given sour, as before described. They also fatten some with potatoes, mixed with chestnuts, and also alone; but in either case boiled thoroughly, and given fresh as boiled every day. They have a great opinion of their fattening quality: they feed their cows also with this root, and finds that it gives a great increase of milk.—Calves reared, either for oxen or cows, suck ten or twelve months, which is the universal practice.

QUERCY.—Brive to Cressensac.—A practical farmer, that has the largest oxen I had met with, gave me the following account:—they fatten with maiz, but, in order to render it tender, pour boiling water on it, cover it up close, and give it to the cattle the same day; and in this method it is a most excellent fattener, both of oxen and poultry. But, in order to make them fatten sooner and better, this farmer gives them, every night, and sometimes of a morning, a ball of pork-grease, as large as an apple; he says this is both physick and food, and makes them thrive the better.

To Souillac.—Fat their oxen here also with raves, and give them also to lean beasts; the master of the post town where we stopped says, that he sent last year to Paris, four raves that weighed 100 lb. They soil their oxen with crops of the *vicia latharoides*, and of the *lathyrus fetifolius*; of these plants he spoke so highly, when given in the soiling way, in the stable, that he said the oxen became so fat, that they could not get out of the stable if they were not worked. He shewed me some oxen that did not allow a doubt of the truth of what he said, for they were as fat as bears. The fact of hog's grease being given, was here confirmed; it is given to increase the appetite, and answers so well, that the beasts perfectly devour their food after it, and their coats become smooth and shining. The most fattening food they know for a bullock, is walnut oil-cake. All here give salt plentifully, to both cattle and sheep, being but 1s. a pound. But this practice is, more or less, universal through the whole kingdom.

Cahors.—Nearly all the draft cattle are mules, and yoked as oxen in England, only collars to the yokes instead of bows. Cows and oxen all cream-coloured; very good, and in fine order.

LANGUEDOC.—*Toulouse.*—Very fine cream-coloured horned oxen; a pair good working ones sell at 25 louis.

St. Gaudents.—Price 120 liv. (5l. 5s.); in the winter kept in stables, and fed upon hay.

Bagnere de Luchon.—Every parish in these mountains has common pastures for their cattle and sheep, and each inhabitant has a right to send as many as they can feed in winter. They are on the mountains three or four months, under the care of people who milk the cows, goats, and ewes, and give the proprietor, at the end of the period, two cheeses, of 18 lb. for each cow; or four goats; or ten ewes; the price of the cheese is 5s. the lb. but 10s. at a year old, and the overplus, if any, is their reward. A cow is reckoned to pay above 2 louis a year, valuing the calf, as they do, at a louis. A pair of cows, stout enough to be worked, sell at 10 to 12 louis; and a pair of oxen 12 to 15 louis.

BASQUE.—Informed by a gentleman, at Bagnere de Luchon, that the mountains in this province afford a very great supply of food, in summer, for cattle, which are sent to winter on the *landes* of Bourdeaux, where they just get a living on weeds, rough grass, branches of trees, &c.; and that they pay only 5s. a head for wintering these cattle, which is perfectly incredible; but I note it as reported. He also informs me, that those mountains of Basque, and also of Navarre, breed most of the oxen that I saw in Limousin; they are sold thither calves; and are all cream-coloured, or yellowish.

LANGUEDOC.—*Pinjean to Montpellier.*—Ploughing with fine large oxen, in good order; some cream-coloured, others deep red; middling horns. The same

same breed has been found all the way, almost from the Loire to Barcelona; and from Calais to the Loire, variations of the short-horned Alderney, or Norman cow.

BEARN.—*Navarens*.—Cream-coloured cows, 100 liv. to 120 liv.

GASCOIGN.—*St. Palais to Anspan*.—In 1786, on these mountains, the scarcity of forage being very great, they cut much fern and made hay of it, and it answered well; horses, mules, and young cattle, eat it freely; but it was cut early. Through this country, and nearly to Bayonne, they fatten oxen with raves, which they cultivate carefully for an after-crop. They answer perfectly well, without other food being given; when the raves are done they sometimes give maiz-flour, but dry, knowing nothing of the Limousin method.

Port St. Marie.—Very fine cream-coloured oxen.

Aguillon.—Ditto, very fine and beautiful.

Tonnium to La Morte Landron.—As we advance on the Garonne, the oxen are yet finer: meet common ones at 600 liv. and 700 liv. the pair; but some very fine that rise to 1000 liv. and 1200 liv. (52l. 10s.) as they are in the plough; all are, however, in fine order, and many fat. Breed their own cattle; a pretty good cow sells at 250 liv.; harness and work them as oxen, but gently while they give milk.

La Réole.—Work their cows: put oxen to work at three years old, and keep them to it four, eight, and even ten years, according as they are found fit for it. Rise in price to 1200 liv. the pair. The least weight they are put to draw, is 20 quintals (a ton English) a pair; but good oxen draw 30 quintals with ease: all harnessed by the horns: they are fed now upon maiz leaves, which are so excellent a food for them, that it is sown in succession thickly for mowing for soiling. Give also at present vine leaves, which are very good food. See them shoe an ox; they are fastened by the horns in a shoeing-stall, and lifted from the ground, if wanted, by two broad bands of hemp, that pass under the belly. The shoe turns over the toe, or hoof, as in England; shoe for ploughing as well as for the road.

Barzac.—Oxen, through all this country, where they are found fine, are dressed as regularly every day as horses.

ANGOUMOIS.—*Barbesieux to Petignac*.—Cream-coloured oxen; 20 louis to 25 louis the pair.

POITOU.—*Poitiers*.—Red-coloured oxen, with a black tinge in the head; the sign of the Poitou breed.

Chateaurault.—Good cream-coloured and red oxen, but they have declined since Bourdeaux. The good ones here sell at 25 louis the pair. They plough with a pair, without driver or reins.

Amboise.—Cream-coloured, and some blackish; and, which shews we are got to the Loire, some Norman ones, with mixtures. This great river is the separation

separation of breeds in a remarkable manner. All the way from Tours to Blois, they raise raves for cows and oxen, but never hoe them; and the scale not at all respectable.

Petiviers.—Cows quite the Norman breed, and the earth tilled by horses.

ISLE OF FRANCE.—Liancourt.—Exceedingly deficient. Some poor ill fed cows upon the commons were all that I saw, except the Dutchess of Liancourt's dairy of Swiss cows. Of oxen and fatting beasts they have none. Very fine fat beef appeared at table, which came from Paris, I think.

Brasseuse.—Madame la Viscountesse du Pont's dairy of cows fed entirely with lucerne, and the butter excellent; I admired it much, and found the manufacture quite different from the common method. The milk is churned instead of the cream. Her dairy-maid is from Bretagne, a province famous for good dairy-maids. The evening's milk and the morning's are put together, and churned as soon as the latter is milked; the proper quantity of salt is added in the churn, and no washing or making in water, which these dairy-maids hold to be a very bad method. Finer butter, of a more delicate flavour, was never tasted, than procured by this method from lucerne.

Commerle en Vexin.—This part of the province is famous for fatting calves for the Paris market. I had gathered some circumstances at Marenne, and they were confirmed here. All is known at Paris under the name of Pontoise veal, but it comes chiefly from this country. The farmers here are mostly, if not all, in the system of suckling. The cows are of the Norman short-horned breed, nearly resembling our Alderney; those of three considerable farmers, whose herds I viewed, were so unexceptionably. The management of their cows is to keep them tied up constantly, as far as food is concerned, but turned out every day for air and exercise, during which time they pick up what the bare pastures yield. Their food is given in the houses, being soiled on lucerne, sain-foin, or clover, mown fresh every day, while they give milk, but hay and straw in winter. The calves also are, in general, tied up in the same house: those I saw, both cows and calves, were all littered; but they seemed to have so little attention to keep them clean, that I inquired the reason; and was told, that they are sometimes suffered to rest on their dung till it rises high, by the addition of fresh straw, but that no inconvenience is found from it. Having been assured that they fed their calves with eggs, for giving reputation to the veal of Pontoise, I inquired into the truth of it, and was assured that no such practice was known; and that the reason of the superiority of the veal of Pontoise, to that of Normandy, from which province most of the other calves come, was simply that of making them fatter by longer sucking; whereas the Norman custom was to feed them with skim milk. In this country of the Vexin, they are in the custom of keeping them till they are of a large size: I saw some of
four

four months old, valued at 4 louis each, and that would be worth 5 louis in another month; some have been sold at 6 louis; and more even than that has been known. I felt one calf that sucked the milk of five cows. It was remarkable to find, that the value of many fattening calves I examined was nearly what it would be in England; I do not think there was 5 per cent. difference. They never bleed them to whiten the flesh, as is done with us. Some of the farmers here keep many cows; Mons. Coffin, of Commerle, has forty, but his farm is the largest in all the country; the country people say it is 20,000 liv. a year.

PICARDIE.—*St. Quintin*.—All the way from Soissons hither, the cattle are some black, and black and white, which is very uncommon in France.

Cambray to Bouchaine.—Feed their cows, and fatten oxen and cows, on carrots. They reckon that no food is so good, for giving much and excellent milk. For fattening an ox they slice them into bran: but they remarked, that in fattening, the great object was to change their food; that a middling one, with change, would go further than a good one without; but in such change, carrots rank very high.

FLANDERS.—*Valenciennes to Orchies*.—Finding that they fed cattle with linseed-cakes, I inquired if they used any of their immense quantity of coleseed-cakes for the same use? And was assured that they did; and that a beast, with proper care, would fatten on them, though not so well as on linseed-cake; also that they feed their sheep with both. For fattening beasts and for cows, they dissolve the cake in hot water, and the animal drinks, not eats it, having various other food given at the same time, as hay, bran, &c.; for there is no point they adhere to more than always to give variety of foods to a fattening beast. Their cows, of which they are very proud, are Dutch; not large, though bigger than the Norman breed; they are red, or red and white, with a few black; the horns short and curled inwards, forward. They are fed in the house the whole year round, but kept clean with the greatest attention. They boast of their butter being equal to any in the world; and I was assured of a cow that gave 19 liv. (16s. 7½d.) in butter every nine days. They feed them with potatoes, which give excellent butter; and with turnips, which give as bad. Cows sell at 150 liv.

To Lille.—All the cattle tied up in houses, as they assured me, the year round; I inquired into their motives for this, and they asserted, that no practice is, they think, so wasteful as letting cattle pasture abroad, as much food, or perhaps more, being spoiled than eaten; the raising dung also is a great object with them, which stands still, to their great loss, when cattle are abroad.

Their cows were now (November 4,) feeding on turnips and cabbages. In every cow-house I saw a tub of bran and water, which is their principal drink; boiled

boiled with bran in it is greatly preferred, but some give it without boiling. Such minutiae of practice seems only possible on a little farm, where the hands are very numerous compared with the quantity of land; but it merits experiment to inquire, how far boiling all the water drank in winter can answer. Without experiment, such questions are never understood. All the cows I saw were littered, but the floors being flat, and without any step at the heel, they were dirty.

NORMANDIE.—*Neufchatel.* There are dairies here that rise to fifty cows, the produce of which in money, on an average, rejecting a few of the worst, is 80 to 100 liv. including calves, pigs, butter, and cheese. In winter they feed them with straw; later with hay; and even with oats and bran; but not the least idea of any green winter food. The vale from hence to Gournay is all full of dairies, and some also to Dieppe. One acre of good grass feeds a cow through the summer.

To Rouen.—Good cows give three gallons of milk a day; they are of the Alderney or Norman breed, but larger than such as come commonly to England.

Pont au Demer.—Many very fine grass inclosures, of a better countenance than any I have seen in France, without watering; grazed by good Norman cows, larger than our Alderneys, but of the same breed: I saw thirty-two in one field. In the height of the season they are always milked three times a day; good ones give three English gallons of milk a day. A man near the town that has got cows, but wants pasture, pays 10*s.* a day for the pasturage of one, which is a very high rate for cattle of this size,

Pont l'Eveque.—This town is situated in the famous Pay d'Auge, which is the district of the richest pasturage in Normandy, and indeed of all France, and for what I know of all Europe. It is a vale of about thirty-five miles long, and from half a mile to two miles over, being a flat tract of exceedingly rich land, at the bottom of two slopes of hills, which are either woods, arable, or poor land; but in some places the pasture rises partly up the hills. I viewed some of these rich pastures, with a gentleman of Pont l'Eveque, Monsr. Beval, who was so good as to explain some of the circumstances that relate to them. About this place they are all grazed by fattening oxen: the system is nearly that of many of our English counties. In March or April, the graziers go to the fairs of Poitou and buy the oxen lean at about 240 liv. (10*l.* 10*s.*): they are generally cream coloured; horns of a middle length, with the tips black; the ends of their tails black; and tan coloured about the eyes, which are the distinctions of the Poitou breed. At Michaelmas they are fat; and sent to the fair at Poissy, that is Paris: such as are bought in at 240 liv. lean, are sold fat at 350 to 400 liv. (15*l.* 6*s.* 3*d.* to 17*l.* 10*s.*) An acre of good pasturage carries more than one
of

of these beasts in summer, besides winter fattening sheep. This acre is 4 verges, each 40 perches, and the perch 22 feet, or a very little better than 2 English acres. The rent of the best of these pastures (called *herbages* here) amounts to 100 liv. (4l. 7s. 6d.) per Norman acre, or nearly 2l. 3s. 9d. the English; the tenant's taxes add 14 liv. (12s. 3d.) or 6s. 1½d. per English acre. The expences may be stated thus:

Rent,	-	-	-	100 liv.
Taxes,	-	-	-	14
Suppose 1½ ox fattened, bought at 240 liv.	360			
	474			
Interest of that total,	23			
	497			
Say,	500			
Ox and an half fat, at 375 liv.	562			
Expences,	500			
Profit,	62			

Which is about 1l. 6s. 6d. per English acre profit; and will pay a man well, the interest of his capital being already paid. As these Norman graziers are generally rich, I do not apprehend the annual benefit is less. In pieces that are tolerably large, a stock proportioned to the size is turned in, and not changed till they are taken out fat. These Poitou oxen are for the richest pastures; for land of an inferior quality, they buy beasts from Anjou, Maine, and Bretagne. The sheep fed in the winter do not belong to the graziers, but are joisted; there is none with longer wool than five inches, but the pasture is equal to the finest of Lincoln. In walking over one of these noble herbages, my conductor made me observe the quantity of clover in it, as a proof of its richness; it was the white Dutch and the common red: it is often thus—the value of a pasture depends more on the *diadelphia* than on the *triandria* family.

To Lisseux.—This rich vale of the Pay d'Auge, some years ago, was fed almost entirely with cows, but now it is very generally under oxen, which are found to pay better. Whatever cows there are, are milked three times a day in summer.

To Caen.—The valley of Corbon is a part of the Pay d'Auge, and said to be the richest of the whole. In this part, one acre, of 160 perches of 24 feet, or about (not exactly) 2¼ acres English, fattens two oxen. Such rents are known as 200 liv. (3l. 17s. per English acre), but they are extraordinary: the propor-

tions here are rather greater, and more profitable than in the former minute. They buy some beasts before Christmas, which they keep on the pasturage alone, except in deep snows; these are forwarder in spring than such as are bought then, and fatten quicker; they have also a few sheep. There are graziers here that are landlords of 10,000 liv. and even 20,000 liv. a year, yet 100 acres are a large farm.

Bayeux.—The rich herbage about this place are employed in fattening oxen, of the Poitou breed, as before; bought lean, on an average, at 200 liv. and sold fat at 350 liv. Their cows are always milked thrice a day in summer, the best give 12 pots a day, or above 4 gallons, and sell at 7 or 8 louis each.

Isigny to Carentan.—Much salt marsh, and very rich; they fat oxen; but I was surprized to find many dairy cows also on these very rich lands. A cow, they say, sometimes pays 10 louis in a year; giving 8 lb. of butter a week, at 20s. to 30s. a pound at some seasons, but now (August 25,) only 10s. which, they say, is ruinously cheap. All are milked thrice a day. Others informed me, that a cow gives 10 lb. a week, at the average price of 15s. These cows resemble the Suffolk breed, in size and brindle colour, round carcase, and short leg; and would not be known from them but by the horns, which are of the short Alderney sort. The profit on fattening a cow here they reckon at 72 liv. and an ox of the largest size 300 liv. They have also a common calculation, that dairy cows feed at the expence of 8s. a day, and yield 20s. leaving 12s. profit. It is remarkable, and cannot be too much condemned, that there are no dairies in this country: the milk is set, and the butter made, in any common room of a house or cottage.

Carentan.—Many oxen are bought at Michaelmas, and kept a year. They eat each in the winter 300 bottles of hay, or 50 liv. but leave 150 liv. profit, that is, they rise from 300 liv. to 450 liv. Cows pay, on an average, 100 liv. and are kept each on a vergé of grass, the rent of which is from 30 liv. to 40 liv. As the vergé is 40 perches, of 24 feet, or 23,040 feet, it is equal to 96 English square perches, which space pays 100 liv. or per English acre 7l. 5s. 3d.; but all expences are to be deducted, including what the wintering costs. Here they have milk-rooms. They work oxen all the way from Bayeux, in yokes and bows, like the old English ones, only single instead of double.

Advancing; cows sell so high as 10 and 12 louis. Many are milked only twice a day: good ones gives $1\frac{1}{4}$ or $1\frac{1}{2}$ lb. of butter a day. They remark, that cows that give the largest quantity of milk do not yield the largest quantity of butter. Fat cows give much richer milk than others.

Again; a good cow gives 6 pots of milk a day, which pays in butter 24s. Three thousand livres profit has been made by fattening thirty cows. A great number of young cattle all over the country, especially year olds.

BRETAGNE.

BRETAGNE.—Rennes.—Good oxen of Poitou 400 liv. to 600 liv. the pair; they are harnessed by the horns. A good cow 100 liv. Milk but twice a day.

Landervisier.—I was at the fair here, at which were many cows; in general of the Norman breed, but small: one of the size of a middling Alderney 4 louis, but said to be dear at present. Colour, black and white, and red and white.

Quimper.—Many black and white small, but well made, cows on the wastes here; a breed somewhat distinct from the Norman; different horns, &c.

Nantes.—Many Poitou oxen; cream coloured; black eyes, tips of horns, and end of tail; about 50 or 60 stone fat; all yoked by the horns.

Nonant.—Much rich herbage; an acre of which feeds two oxen, to the improvement of 160 liv. Many cows are fattened also; and some milked always three times a day in summer.

To Gacé.—Some very fine cream-coloured oxen, of 60 stone or more; but, in general, red and white, not Poitou.

ISLE OF FRANCE.—Nangis.—Cows sell at 4 louis or 5 louis; oxen, half fat, from 8 louis to 11 louis. They come from Franche Compté.

CHAMPAGNE.—Mareuil.—Mons. Le Blanc's Swiss cows give 18 pints, of Paris (the Paris pint is an English quart), of milk per diem, and hold their milk remarkably long. He gave 40 louis for a bull and a cow.

LORRAINE.—Braban.—A small cow 75 liv.

ALSACE.—Strasbourg.—A cow 6 louis; an ox the same.

Iffenheim.—Cows improve as you approach Franche Compté.

Besort.—Good oxen, red and cream-coloured, to 25 louis a pair.

Isle.—Here much smaller; and they say the fine ones I have seen are from the mountains on the frontiers of Swisserland.

BOURGOGNE.—Dijon to Nuys.—Small oxen in this country, and yoked by the horns.

Autun to La Maison de Bourgogne.—Good oxen drawing by the horns.

AUVERGNE.—Clermont.—Salt given twice a day to cows that give milk. In the mountains the price of cows 150 liv. to 200 liv.; a few 300 liv.: an ox from 200 liv. to 450 liv.

Izoir.—A pair of good oxen 16 louis to 18 louis, which will draw 2000 lb. The Poitevins will buy only red cattle in Auvergne, having remarked that they fatten easier*.

VIVARAIS.—Costerons.—A small cow 4 louis.

PROVENCE.—The cities of Aix, Marseilles, and Toulon, are fed by oxen, cows, and sheep, from Auvergne, which come every week; and a few from Piedmont.

* See also *Voyage D'Auvergne, par Mons. Le Grand D'Aussy.* 8vo. 1788. P. 273.

Tour d'Aigues.—A pair of good oxen 18 louis or 20 louis. When they have done working, they are fattened with the flour of the *latbyrus sativus*, &c. made into a paste, and balls given fresh every night and morning; each ox two or three balls, as large as a man's fist, with hay.

Observations.

FROM the preceding notes it appears, that in Normandy, the Bas Poitou, Limoufin, Quercy, and Guienne, the importance of cattle is pretty well understood; in some districts very well; and that in the pasturage part of Normandy, the quantity is well proportioned to the richness of the country. In all the rest of the kingdom, which forms much the greater part of it, there is nothing that attracts notice. There would, in eighteen-twentieths of it, be scarcely any cattle at all, were it not for the practice of ploughing with them. There are some practices noted, which merit the attention even of English farmers.—1. The Limoufin and Quercy methods of fattening, by means of acid food.—It is remarkable, that I have found hogs to fatten much better with their food become acid, than when used fresh*. But in England no experiments, to my knowledge, have been made, on applying the same principle to oxen; it is, however, done in the Limoufin with great success. The subject is very curious, but the brevity necessary to a traveller will not allow my pursuing it at present.—2. The practice in Flanders, and, in some degree, in Quercy, &c. of keeping cows, oxen, and all sorts of cattle, confined in stables the whole year through.—This I take to be one of the most correct, and probably one of the most profitable, methods that can be pursued; since, by means of it, there is a constant accumulation of dung throughout the year, and the food is made to go much further.—3. Milking well fed cows thrice a day, as in Normandy.—Experiments should be made on the advantages of this practice, which will probably be found not inconsiderable; it is never done, either in England nor in Lombardy.

Except in the provinces I have named, the management of cattle in France is a blank. On an average of the kingdom, there is not, perhaps, a tenth of what there ought to be: and of this any one must be convinced, who reflects, that the courses of crops throughout the kingdom are calculated for corn only; generally bread corn; and that no attention whatever is paid to the equally important object of supporting great herds of cattle, for raising manure, by introducing the culture of plants that make cattle the preparative for corn, instead of those barren fallows which are a disgrace to the kingdom. This system of interweaving the crops which support cattle, amongst those of corn, is the

* *Annals of Agriculture*, vol. i. p. 340.

pillar of English husbandry; without which our agriculture would be as miserable and as unproductive as that of France. The importance of grass in such views, is little understood in France; but in proportion as corn is the ultimate object, should be the attention that is paid to grass. England, by the immense extent of her pastures, has a prodigious preparation always ready for corn, if it was demanded. He who has grass, can, at any time, have corn; but he who has corn, cannot at any time have grass, which demands one or two years accurate preparation. In proportion to your grass, is the quantity and mass of your improvements; for few soils, not laid to grass, are at their last stage of improvement. The contrary of all this takes place in France; and there is little appearance, from the complexion of those ideas which are at present fashionable there, that the kingdom will be materially improved in this respect: the prejudices in favour of small farms, and a minute division of property, and the attention paid to the pernicious rights of commonage, are mortal to such an improvement; which never can be effected but by means of large farms, and an unlimited power of inclosure.

Horses.

THIS is an animal about which I have never been solicitous, nor ever paid much attention; I was very early and practically convinced of the superiority of oxen for most of the works of husbandry; I may, indeed, say for all, except quick harrowing: and if oxen trot six miles an hour with coaches, in Bengal, which is the fact, they are certainly applicable to the harrow, with proper training. To introduce the use of oxen in any country, is so important an agricultural and political object, that the horse should be considered merely as administering to luxury and war. The very few minutes I took, I shall insert in the order they occurred.

LIMOUSIN.—This province is reckoned to breed the best light horses that are in the kingdom; and some capital regiments of light horse are always mounted from hence; they are noted for their motion and hardiness. Some miles to the right of St. George, is Pompadour, a royal demesne, where the King has a *baras* (stud): there are all kinds of horses, but chiefly Arabian, Turkish, and English. Three years ago four Arabians were imported, which had been procured at the expence of 72,000 liv. (3149l.); and, owing to these exertions, the breed of this province, which was almost spoiled, has been much recovered. For covering a mare, no more is paid than 3 liv. which is for the groom, and a feed of oats for the horse. They are free to sell their colts to whom they please; but if they come up to the King's standard of height, his officers have the preference, on paying the same price offered by others; which, however,

however, the owner may refuse, if he pleases. These horses are never saddled till six years old, and never eat corn till they are five; the reason given is, that they may not hurt their eyes. They pasture all day, but not at night, on account of the wolves, which abound so in this country as to be a nuisance. Prices are very high; a horse of six years old, a little more than 4 feet 6 inches high, sells for 70 louis; and 15 louis have been offered for a colt at one year old. The pastures are good, and proper for breeding horses.

Cabors.—Bean-straw they reckon excellent for horses, but not that of pease, which is too heating.

Agen.—Meet women going to this market, loaded with couch roots to sell for feeding horses. The same practice obtains at Naples.

SAINTONGE.—*Monlieu.*—Never give chaff to their horses, as they think it very bad for them.

ISLE OF FRANCE.—*Dugny.*—Mons. Cretté de Palleteau has found cut chaff one of the most economical foods that can be given to horses; and his machine for cutting it is by far the most powerful one that I have any where seen. It is a mill turned by a horse; the cutting instruments are two small cylinders, that revolve against each other, circular cutting hoops being on their surface, that lock into each other; those of one plain, but of the other toothed: just above them is a large trough or tray, to hold a truss of straw, which weighs 12 lb. and the machine cuts it into chaff in three minutes, without putting the horse out of his pace; and in two minutes, by driving him quicker; a man attends to spread the straw equally in the tray, as it is sucked in by the revolving cylinders; a boy driving the horse. One of the machines common in England, for dressing corn, is at the same time turned: the whole is in a building of eight yards square.

NORMANDIE.—*Isigny.*—The rich herbage here are fed, not only with bullocks and cows, but also with mares and foals.

Carentan.—Colts, bred here, sell for very high prices, even to 100 louis, at three years old; but in general good ones from 25 to 30 louis.

BRETAGNE.—*Rennes.*—Good horses sell at 150 liv. The author of the *Considerations sur le Commerce de Bretagne*, says, p. 87. that he has seen many markets in the bishoprics of Rennes and Nantes, where the best horse was not worth 60 liv.

Morlaix.—See in this vicinity, for several miles, some fine bay mares with foals:

Auvergnac.—Informed that Bretagne exports 24,000 horses, from 12 to 25 louis each; and the country that chiefly produces them is from Lamballe to the sea beyond Brest.

ALSACE.—*Straßbourg.*—A good farm horse 12 louis.

To Schelestadt.—Clover mown for soiling all the way.

The

The Norman horses for draft, and the Limousin for the saddle, are esteemed the best in the kingdom. Great imports have been made of English horses for the coach and saddle. It is no object to lessen that import, for their own lands can be applied to much more profitable uses than breeding of horses. The *œconomistes* were great enemies to the use of oxen, and warm advocates for that of horses becoming general; one of the many gross errors which that fanciful sect were guilty of.

Hogs.

GASCOIGN.—*St. Palais to Anspan.*—See many fine white, and black and white hogs; they are fed much on acorns, but are fattened throughout this country on maize ground to flour, and boiled with water to a paste, and given fresh, milk-warm, every day. Some on beans. They are turned a year old when put to fatten; rise to the weight of two or three quintals. These are the hogs that furnish Bayonne with the hams and bacon, which are so famous all over Europe. The hams sell at 20*s.* the pound.

I have reserved this minute, from some others of little consequence, for the opportunity of remarking, that, in England, the old custom of feeding hogs with warm food, is totally discontinued; but it well deserves experiment, whether it would not answer in fattening, and also in the nourishment of sows and pigs. Such experiments are difficult to make satisfactorily, but yet they ought to be made by some persons that are able. Warm food in winter, regularly given, I should suppose, must be more fattening than that which is cold, and, in bad weather, half frozen.

C H A P. XIII.

Of the Culture of various Plants in France.

IN the course of my inquiries into the French agriculture, I made some minutes on various articles, that do not merit a separate chapter assigned to each; I shall therefore introduce them to the reader alphabetically. It may be of use to future travellers to know what articles are cultivated in that kingdom, that they may give to each such an attention as may suit their purpose.

Almonds.

PROVENCE.—*Aix.*—More subject to accidents than olives: sometimes three, four, and five bad crops to one good. Olives flower in June, but almonds in February, and consequently subject to frosts. The produce of a good tree is commonly 3 liv.

Tour d'Aigues.—Do not yield a good crop oftener than once in ten years. Price 36 to 40 liv. the quintal: four and an half quintals in the shell yield one clean: the price has been 70 liv. Price of the pistachio almond 6 liv. the 15 lb. in the shell. Some few fine almond trees will give a quintal in the shell. They are a most hazardous culture, by reason of the fog that makes them drop; the worm that eats; and the frost that nips.

Beans.

SOISSONNOIS.—*Coucy.*—In the rich lands cultivated, in the course of, 1, beans; 2, wheat, remark now (October 31,) some beautifully curled and luxuriant pieces of wheat, which, from the beans among it, appear to have been sown after this crop.

ARTOIS.—*Lillers to Bethune.*—Many beans through all Artois, in drills at 12 or 14 inches, very fine and very clean; the culture is as common and as good as in Kent, and they have a much richer soil. Wheat is sown after mustard, flax, and beans; and is better after beans than after either of the other two crops.

ALSACE.—*Wiltenheim to Strasbourg.*—Many pieces; good and very clean. Produce, six sacks (of 180 lb. of wheat) per arpent of 24,000 feet (28 bushels per English acre).

Schelestadt.—Produce, six to eight sacks, at 7 to 12 liv. (7 at 9 liv. is 4l. 7s. per English acre).

The

The culture of beans is by no means so common in France as it ought to be; they are a very necessary assistance on deep rich soils in the great work of banishing fallows; they prepare on such soils better than any other crop for wheat, and are of capital use in supporting and fattening cattle and hogs.

Broom.

BRETAGNE.—*Rennes*.—The land left to it in the common course of crops. It is cut for faggots; sold to the bakers, &c.

Morlaix.—Cultivated through all this country, in a very extraordinary system; it is introduced in a regular course of crops, and left three or four years on the land; at which growth cut for faggots, and forms the principal fuel of the country. It is a vast growth, much superior to any thing I ever saw; six or seven feet high, and very stout; on regular lands, with intervals of two or three feet. Price sometimes of a cord of wood, 30 liv. Does this apologize for such a system?

Brest.—The broom seed is sown among oats, as clover is in other places, and left four years, during all which time it is fed. The faggots of a good journal will sell for 400 liv. (14l. per English acre). The faggots weigh 15 lb. and sell fifty for 9 liv. to 12 liv. being a three-horse load. It is only within reach of Brest market that it is worth 400 liv.—elsewhere only 300 liv. the best. Four years broom improves land so much, that they can take three crops of corn after it.

BOURGOGNE.—*Luzy*.—When I left Bretagne, I never expected again to find broom an article of culture; but the rye-lands of all this country, and there is nothing but rye in it, are left, when exhausted by corn, to cover themselves with broom during five years; and they consider it as the principal support of their cattle.

To Bourbonlancy, and Bourbonnois, Moulins.—Much broom through all this district of rye-land

Carrots and Parsnips.

FLANDERS.—*Cambray*.—See some fine carrots taken up, which, on inquiry, I find are for cows. They sow 4 lb. of seed per arpent; hoe them thrice: I guessed the crop about four bushels per square rod. An arpent sells, for cattle, at 180 liv. the purchaser taking up (5l. 5s. per English acre). After them they dung lightly, and sow wheat.

Orchies to Lille.—The culture here is singular; they sow the seed at the same time, and on the same land, as flax, about Easter; that crop is pulled in July, the carrots then grow well, and the produce more profitable than any other

application of the flax stubble. They yield, I guess, from 60 to 80 bushels, and some more, per English acre; but what I saw were much too thick.

Argentan to Bailleul.—Carrots taken up, and guarded, by building in the neatest and most effectual way, against the frost; they are topped, laid in round heaps, and packed close, with their heads outwards; and being covered with straw, in the form of a pyramid, a trench is dug around, and the earth piled neatly over the straw, to keep out the frost. In this manner they are found perfectly secure.

Artois.—*Afs to Aras.*—A sprinkling of carrots, but none good.

Bretagne.—*Ponton to Morlaix.*—Many parsnips cultivated about a league to the left; they are sown alone and hoed. They are given to horses, and are reckoned so valuable, that a journal is worth more than one of wheat. Nearer to Morlaix, the road passes a few small pieces. They are on beds, 5 or 6 yards broad, with trenches dug between, and on the edges of those trenches a row of cabbages.

Morlaix.—About this place, and in general through the bishopric of St. Pol de Leon, the culture of parsnips is of very great consequence to the people. Almost half the country subsists on them in winter, boiled in soup, &c. and their horses are generally fed with them. A horse load, of about 300 lb. sells commonly at 3 liv.; in scarce years at 4 liv.; and such a load is good food for a horse fifteen days. At 60 lb. to the bushel, this is 5 bushels, and 2s. 7½d. for that, is 6½d. per bushel of that weight. I made many inquiries how many loads on a journal, but no such thing as information tolerably to be depended on; I must therefore guess the present crop, by the examination I made of many, to amount to about 300 bushels, or 350 per English acre. The common assertion, therefore, that a journal of parsnips is worth two of wheat, seems to be well founded. The ground is all dug a full spit deep for them; they are kept clean by hand-weeding very accurately, but are left, for want of hoeing, beyond all comparison, too thick. They are reckoned the best of all foods for a horse, and much exceeding oats; bullocks fatten quicker and better on them than on any other food; in short, they are, for all sorts of stock, the most valuable produce found on a farm. The soil is a rich deep friable sandy loam.

Landernau to Brest.—The culture of parsnips here declines much, but I saw a few pieces; one was weeding by five men, crawling on their knees. Fatten many horses, by feeding them with cabbages and parsnips boiled together, and mixed with buckwheat-flour, and given warm. They have a great pride here in having fat horses. Many other districts in France, besides Bretagne, possess the right soil for parsnips; and many more, besides Flanders, that for carrots; but they are no where else articles of common culture. Parsnips are not cultivated in England; but carrots are in Suffolk, with great success, and all the
horses

horses in the maritime corner of that county fed with them. I have, in the *Annals of Agriculture*, given many details of their culture and uses. Carrots succeed well on all dry soils that are six inches deep; but, for large crops, the land should be a foot deep, rich, and dry. The extent of such in France is very great, but this general profitable use not made of them.

Cabbages.

FLANDERS.—*Orchies to Lille.*—The kale, called here *choux de Vache*, is common through this country; it never cabbages, but yields a large produce of loose reddish leaves, which the farmers give to their cows. The seed is sown in April, and they are transplanted in June or July, on to well dunged land, in rows, generally two feet by one foot: I saw some fields of them, in which they were planted at greater distances. They are kept clean, by hoeing. They are reckoned excellent food for cows; and the butter made from them is good, but not equal to that from carrots.

NORMANDIE.—*Granville to Avranches.*—In the gardens of the cottages, many cabbage trees five and six feet high.

BRETAGNE.—*St. Brieux.*—Many sown here on good land, on wheat stubbles, for selling plants to all the gardens of the country, and to a distance. I do not see more than to the amount of a journal in one piece; which, in September, I must have done, had they possessed any cabbage culture, as represented to me, worth attention. They first clean, and then plough the wheat stubbles, and chop and break the surface of the three-feet ridges fine, and then sow. The plants are now (September 7,) about an inch high, and some only coming up.

Morlaix.—They have some crops that are much more productive than their turnips, but planted greatly too thick: they are given to cows and oxen.

ANJOU.—*Migniame.*—The *chou d'Anjou*, of which the Marquis de Turbilly speaks, is not to be found at present in this country; they prefer the *chou de Poitou*, which is a sort of kale, and produces larger crops of leaves than the *chou d'Anjou*. Mons. Livonniere gave me some seeds, but, by mistake, they proved a bad sort of *rave*, and not comparable to our turnips, as I found, by sowing them at Bradfield.

ALSACE.—*Saverne to Wiltenheim.*—Many cabbages, but full of weeds.

Straßbourg.—Crops to a great weight, but only for four-croût.

Schelestat.—The quantity increases between Benfeldt and Schelestat. Their culture is, to sow the seed on a bed in March, covered with mats, like tobacco, and transplant in June, 2000 to 3000 plants on an arpent; they make a hole with a spade, which they fill with water, and then plant: they never horse-hoe, yet the distance would admit it well. They are in size 10 lb. or 12 lb. and some

20 lb.; the hearts are for four-croût, but the leaves for cows. An arpent is worth 300 liv. (20l. 15s. 10d. per English acre); but carriage to a town is to be deducted.

The culture of cabbages, for cattle, is one of the most important objects in English agriculture; without which, large stocks of cattle or sheep are not to be kept on soils improper for turnips. They are, in every respect but one, preferable to that root; the only inferiority is, that of cabbages demanding dung on all soils, whereas good land will yield turnips without manuring. Great attention ought to be paid to the full introduction of these two crops, without which we may venture to predict, that the agriculture of France will continue poor and unproductive, for want of its due stock of cattle and sheep.

Clover.

ISLE OF FRANCE.—*Liancourt*.—Never cultivate it for its place in a rotation, but merely for forage, like lucerne; have a barbarous custom of sowing it without tillage on wheat stubbles, and it lasts so sometimes two years.

ARTOIS.—*Recouffe*.—Mons. Drinkbiere, a very intelligent farmer here, assured me, that clover exhausted and spoiled the land, and that wheat after it was never so good as after a fallow; but as the clover is sown with a second, and even a third corn crop, no wonder therefore that it fouls land.

I could add many other notes on this subject, but will be content to mention, in general, that the introduction of clover, wherever I have met with it, has been commonly effected in such a manner that very little benefit is to be expected from it. All good farmers in England know, from long experience, that the common red clover is no friend to clean farming, if sown with a second or third crop of corn. In the course, 1, turnips or cabbages; 2, barley or oats; 3, clover; 4, wheat: the land is kept in garden order. But if after that fourth crop, the farmer goes on and sows, 5, barley or oats; 6, clover; 7, wheat, the land will be both foul and exhausted. In a word, clover is beneficial to the really good and clean farmer only to the extent of his turnips, cabbages, and fallow; and never ought to be sown but on land previously cleaned by those hoeing crops, or by fallow. As to fallow, no Frenchman ever makes it but for wheat, consequently the culture of clover is excluded. I have often seen it sown in this course; 1, fallow; 2, wheat; 3, barley; 4, oats; 5, clover; 6, clover; 7, wheat; 8, oats; and the land inevitably full of weeds. I may venture to assert, that clover thus introduced, or even in courses less reprehensible, but not correct, will do more mischief than good, and that a country is better cultivated without than with it. Hence, therefore, let the men, emulous of the character of good farmers, consider it as essential to good husbandry to have no more clover

clover than they have turnips and cabbages, or some other crop that answers the same end; and never to sow it but with the first crop of corn; by these means their land will be clean, and they will reap the benefits of the culture without the common evils.

I have read in some authors, an account of great German farmers having such immense quantities of clover, as are sufficient to prove the utter impossibility of a due preparation: these quantities are made a matter of boast. We know, however, in England, in what manner to appreciate such extents of clover.

Chestnuts.

BERRY.—*La Marche*.—First meet with them on entering La Marche.

Boismandè.—They are spread over all the country; the fruit are sold, according to the year, from 5*s.* to 10*s.* and 15*s.* the boisseau, which measure will feed a man three days: they rub off the skin; boil them in water with some salt; squeeze them into a kind of paste, which they dry by the fire; they commend this food as pleasant and wholesome. The small ones are given to pigs, but will not fatten them so well as acorns, the bacon being soft; when fattened with acorns, they are finished with a little corn. A chestnut tree gives two boisseau each of fruit on an average; a good one five or six. The timber is excellent for building; I measured the area spread by many of them, and found it 25 feet every way. Each tree, therefore, occupies 625 feet, and an acre fully planted would contain 70; at two boisseau each it is 140, which, at 10*s.* is 2*l.* 18*s.* 4*d.* and as one of these measures will feed a man three days, an acre would support a man four hundred and twenty days, or fourteen months. It must, however, be obvious, that land cannot be so exactly filled, and that an acre of land would not probably, in common, do for half that number.

La Villeaubrun.—They eat many chestnuts, but do not live upon them, eating some bread also; in which mode of consuming a boisseau, it will last a man five or six days. Price as above.

LIMOUSIN.—*Limoges*.—Price 7*s.* to 15*s.* the boisseau. This food, though general in the country, would not be sufficient alone; the poor eat therefore some rye-bread. The comfort of them to families is very great, for there is no limit in the consumption, as of every thing else; the children eat them all day long; and, in seasons when there are no chestnuts, there is often great distress among the poor—The exact transcript of potatoes in Ireland. The method of cooking chestnuts here, is to take off the outward skin, and to put a large quantity into a boiler, with a handful of salt, and very little water, to yield steam: they cover it as closely as possible, to keep in the steam: if much water is added, they
lose

lose their flavour and nourishing quality. An arpent under chefnuts does not yield a product equal to a good arpent of corn, but more than a bad one.

To Magnac.—They are spread over all the arable fields.

QUERCY.—Brive to Noailles.—Ditto; but after Noailles there are no more.

Payrac.—Boil them for their food, as above described.

LANGUEDOC.—Gange.—Many in the mountains; and exceedingly fine chefnut-underwood.

POITOU.—Ruffec.—Yields a good crop, to the amount even of 10 liv. for a good tree's produce. The poor people live on them. A measure of 45 lb. has been sold this year at 48s.

BRETAGNE.—Pont Orson.—On entering this province, these trees immediately occur, for there are none on the Normandy side of the river, that parts the two provinces.

MAINE.—La Fleche to Le Mans.—Many chefnuts, the produce chiefly sold to towns; the poor people here not living on them with any regularity: three bushels (each holding 30 lb. of wheat) are a good crop for one tree, and sell at 40s. the bushel; this is more than a mean produce, but not an extraordinary one. The number here is very great; and trees, but of a few years growth, are well loaded.

VIVARAIS.—Pradelles to Thuytz.—Immense quantities of these trees on the mountains; it is the greatest chefnut region I have seen in France. The poor people live on them boiled; and they sell, by measure, at the price of rye.

The husbandry of spreading chefnuts over arable lands must unquestionably be very bad; the corn must suffer greatly, and the plough be much impeded. It is as easy to have these trees upon grass land, where they would be comparatively harmless: but the fact is here, as is so general in France, that they have no pastures which the plough does not occupy by turns; all, except rich meadows, being arable. The fruit is so great a resource for the poor, that planting these trees upon lands not capable of tillage by the plough, is a very considerable improvement: the mountains of the Vivarais thus are made productive in the best method perhaps that they admit.

Chicory.

ISLE OF FRANCE.—Dugny.—Mons. Cretté de Paleuel, 1787, had this plant recommended to him by the Royal Society of Paris; in consequence of which, he has made several very successful experiments on it. He has had it two years under cultivation. The seed is sown in March, 12 lb. per arpent (100 perches at 18 feet) on one ploughing, and is harrowed in. It rises so thick, as to cover the whole ground, and is mown the same year once; Mons. Cretté has cut one piece.

piece twice the first year. The following winter he dunged it, at the rate of eight loads, of three horses, per arpent. The year after, some was cut three times, and some four; and Mons. Cretté remarks, that the oftener the better, because more herbaceous and the stalks not so hard. He weighed the crop upon one piece and found the weight green,

		lb.
Of the first cutting,	- - -	55,000
second,	- - -	18,000
third,	- - -	3,000
Per arpent		76,000

By making some of it into hay, he found that it lost three-fourths of its weight in drying, consequently the arpent gave 19,000 lb. of hay, or 10 tons per English acre. It is so succulent and herbaceous a plant, as to dry with difficulty, if the weather be not very fine; but the hay, he thinks, is equal to that of clover, though inferior to meadow hay. He has used it much in soiling, and with great success, for horses, cows, young cattle, and calves; finds it to be eaten greedily by all, and to give very good cream and butter. Mons. Cretté's fine dairy of cows being in their stalls, he ordered them to be fed with it in my presence; and they ate all that was given, with great avidity. When in hay, it is most preferred by sheep; cows do not, in that state, eat the stalks so well as sheep. A circumstance, which he considers as valuable, is its not being hurt by drought so much as most other plants; and he informs me, but not on his own experience, that it will last good ten years.

I viewed one of his crops, of seven or eight arpents, sown last spring, and which has been mown once; I found it truly beautiful. He sowed common clover and sainfoin among it, and altogether it afforded a very fine fleece of herbage, about eight or nine inches high (October 28,) which he intends feeding this autumn with his sheep. He is of opinion, that the sainfoin will be quite suffocated; and that the chicory will get the better of the clover.

PROVENCE.—*Vaucluse to Orgon*.—In a very fine watered meadow, one-third of the herbage is this plant.

I liked the appearance of this plant so well in France; and was so perfectly satisfied with what I saw of it, cultivated by Mons. Cretté de Paleuel, and growing spontaneously in the meadows, that I brought seed of it to England; and have cultivated it largely at Bradfield, with such success, that I think it one of the best presents France ever made to this kingdom. I sow it with corn like clover; but it pays well for occupying the land entirely. It will prove, without doubt, a very valuable plant for laying land permanently to grass; and also for introducing, in courses of crops, when the land wants rest for three, four, or five

five years. I am much mistaken if we do not in a few years make a much greater progress in the culture of this plant than the French themselves, from whom we borrowed it, will do.

Sheep are said to be very fond of it *, a fact I have sufficiently proved in Suffolk. From a passage in an Italian author, who speaks of sowing the wild chicory, I am in doubt whether the French have the honour of being really the first introducers of this plant †.

Coleseed.

FLANDERS.—*Cambray*.—Near this town, I met first with the culture of coleseed: they call it *gozá*. Sow the seed thick on a seed-bed, for transplanting; setting it out on an oat stubble, after one ploughing. This is so great and striking an improvement of our culture of the same plant, that it merits the utmost attention; for saving a whole year is an object of the first consequence. The transplanting is not performed till October, and lasts all November, if no frost; and at such a season there is no danger of the plants not succeeding: earlier would however surely be better, to enable them to be stronger rooted, to withstand the spring frosts, which often destroy them; but the object is not to give their attention to this business till every thing that concerns wheat sowing is over. The plants are large, and two feet long; a man makes the holes with a large dibble, like the potatoe one used on the Essex side of London, and men and women fix the plants, at 18 inches by 10 inches; some at a foot square, for which they are paid 9 liv. per manco of land. The culture is so common all the way to Valenciennes, that there are pieces of two, three, and four acres of seed-bed, now cleared, or clearing, for planting. The crop is reckoned very uncertain; sometimes it pays nothing, but in a good year up to 300 liv. the arpent (100 perches of 24 feet), or 8l. 15s. the English acre. They make the crop in July; and, by manuring the land, get good wheat.

Valenciennes to Orchies.—This is a more valuable crop than wheat, if it succeeds; but it is very uncertain. All transplanted.

Lille.—The number of mills, near Lille, for beating coleseed is surprizing, and proves the immense quantity of this plant that is cultivated in the neighbourhood. I counted sixty at no great distance from each other.

Bailleul.—The quantity cultivated through this country immense; all transplanted; it occurs once in a course of six or seven years. Price of the cakes 3½s. each; they are the same size as ours in England.

* *Phytographie Oeconomique de la Lorraine*, par M. Willemet. 1780. 8vo. P. 57.

† *Ronconi Dizionario D'Agricoltura o sia La Coltivazione Italiana*. Tom. ii. P. 148.

ARTOIS.—*St. Omers*.—Great stacks of coleseed straw all over the country (August 7th), bound in bundles, and therefore applied to use.

I should remark, in general, that I never met with coleseed cultivated in any part of the kingdom merely for sheep-feed; yet it is an object, so applied, of great consequence, and would be particularly useful in France, where the operose cultures of turnips and cabbage will be long establishing themselves. With this view coleseed should be thus introduced:

1. Winter tares, sown the beginning of September on a wheat stubble; mown for soiling: then the land ploughed and coleseed harrowed in.
2. Barley, or oats.
3. Clover.
4. Wheat.

Fuller's Thistle.

ISLE OF FRANCE.—*Liancourt*.—Very profitable; has been known to amount to 300 liv. or 400 liv. the arpent (about 1½ acre).

Furz.

GASCOIGN.—*St. Palais to Anspan*.—A practice in these mountainous wastes, which deserves attention, is their cutting furz when in blossom, and chopping them mixed with straw for horses, &c.; and they find that no food is more hearty or nourishing.

NORMANDIE.—*Vologne to Cherbourg*.—Throughout this country a scattering of furz sown as a crop, with wheat or barley, as clover is usually sown: the third year they cut it to bruise for horses; and every year afterwards; and it yields thus a produce of 40 liv. the vergé, of 96 English perch.

BRETAGNE.—*St. Pol Leon*.—Through all this bishopric the horses are fed with it bruised, and it is well known to be a most nourishing food.

The practice here minuted is not absolutely unknown in England; there are many traces of it in Wales, and some other parts of the kingdom. I have been assured that an acre, well and evenly seeded, and mown for horses every year, has yielded an annual produce, worth, on a moderate estimate, 10l. but I never tried it, which was a great neglect, in Hertfordshire, for I had there land that was proper for it.

Culture of Hemp and Flax.

PICARDIE.—*Montreuil to Picquigny*.—Small patches of flax all the way. At Picquigny, a good deal of land ploughing for hemp, to be sown in a week (May 22).

QUERCY.—The hemp, in much of this province, is sown every year on the same spots; and very often highly manured. This appears to be an erroneous system, wherever the lands in general are good enough to yield it.

Caussade.—Vast quantities near this place, now (June 12,) two or three feet high.

LANGUEDOC.—*Monrejeau*.—Flax now (August 10,) grafting.

Bagnere de Bigore to Lourd.—Never water their flax, only graft it. I saw much with the grafts grown through it; if the land or weather be tolerably wet, three weeks are sufficient.

GUIENNE.—*Port de Leyrac*.—This noble vale of the Garonne, which is one of the richest districts of France, is also one of the most productive in hemp that is to be found in the kingdom.

Agen.—Hemp yields 10 quintals per carterée, at 40 liv. the quintal, *poid de table* (171. 10s.), which carterée is sown with 217 lb. of wheat. This is probably about 1½ English acre.

Aguillon.—The hemp is every where watering in the Garonne: they do not leave it in more than three or four days.

Tonneins.—The whole country, from Aguillon to this place, is all under either hemp or wheat, with exception of some maize; and its numerous population seems now employed on hemp.

La Morte Landron.—It yields 10 to 12 quintals, at 36 liv. to 45 liv. the quintal.

SOISSONOIS.—*Coucy*.—Hemp cultivated in the rich vales, in the course,—1, hemp;—2, wheat. It yields 500 bottes, at 25 liv. the hundred, reckoned on the foot before watering.

St. Amand.—The carterée of land, of 100 verge of 19 feet (36,100 feet), under flax, has this year a very good crop, on account of the rainy weather; it has been sold at 1200 liv. or very near the fee simple of the land (55l. 11s. 3d. per English acre). This amazing value of flax, made me desirous of knowing if it depended on soil, or on management. Sir Richard Weston, in the last century, who has been copied by many scores of writers since, speaks of poor sandy land as being the best for that flax of which the fine Brussels lace is made; consequently this is made from land abundantly different from what produces the Valenciennes laces, if that assertion were ever true. The soil at St. Amand is
a deep

a deep moist friable loamy clay, of vast fertility, and situated in a district where the greatest possible use is made of manures; it therefore abounds very much with vegetable mould. Flax is sown on the same land, once in twelve to fifteen years; but in Austrian Flanders once in seven or eight years. Advancing, and repeating my inquiries, I was assured, that flax has been raised to the amount of 2000 liv. the carterée (92l. 15s. 6d. per English acre). The land is nearly the same as above-described, and lets, when rented, at 36 liv. the carterée (11l. 13s. 3d. per English acre). They sow 2 *raziers* of seed, each holding 50 lb. of wheat per carterée; and a middling crop of good flax is from 3½ to 4 feet high, and extremely thick. They water it in ditches, ten, twelve, and fourteen days, according to the season; the hotter the weather, the sooner it is in a proper state of putrefaction. After watering, they always grafs it in the common method.

Going on, and gleaning fresh information, I learned, that 1200 liv. may be esteemed a great produce per carterée; the land all round, good and bad, of a whole farm letting at 30 liv. and selling at 1200 liv. Nothing can shew more attention than their cultivation: besides weeding it with the greatest care, while young, they place poles, or forked stakes, amongst it, when at a proper height, in order to prevent its being beaten to the ground by rain, from its own length and weight; without this precaution it would be flat down, even to rotting.

Orchies.—A carterée of flax, of 40,000 feet, rises to the value of 1500 liv. and even more (63l. 18s. 9d. per English acre). They sow such as is intended for fine thread, as soon as the frosts are over, which is in March; but such as is for coarser works, so late as May. Never seed their own flax, always using that of Riga. They prefer for it, an oat-stubble that followed clover; and they manure for it in the winter preceding the sowing. Wheat is, in general, better after flax than after hemp.

Lille.—Flax, in common, is worth 90 liv. the *centier*, or 360 liv. the carterée (15l. 6s. 3d. per English acre): this is excluding uncommon crops.

ARTOIS.—*Lillers*.—Flax all through the country, and exceedingly fine. Sow wheat after it.

Bethune.—An arpent of good flax worth more than one of wheat; yet good wheat is worth 200 liv.

Beauval.—Flax sometimes worth 500 liv the journal (25l. 17s. 11d. per English acre). Hemp does not equal it. They do not water flax here, only spread it on grafs or stubbles.

NORMANDIE.—*Bolbec to Harfleur*.—Flax not watered, but spread on stubble.

BRETAGNE.—Throughout this province, they every where cultivate flax, in patches, by every family, for domestic employment.

Ancenis.—The culture of flax is generally, throughout the kingdom, as well as in the greatest part of Europe, that of a spring crop; but here it is sown in autumn. They are now working the wheat-stubbles on one ploughing, very fine, with a stout bident-hoe, and sowing them: some is up. It is pulled in August, and wheat sown after it.

ANJOU.—*Migniame.*—They have winter-sown flax all over the country. The value of the crop exceeds that of wheat. They do not water, only grafs it; yet admit that watering makes it whiter and finer.

Turbilly.—Hemp is sown in patches every where through the country; sells at 8*s.* the pound raw; spun, at 26*s.* and 27*s.*; bleached, at 30*s.* to 36*s.* The crop is 30 to 40 weights, each 15 lb. or 16 lb. per journal, or about 210 liv.

MAINE.—*Guesceland.*—Through all this country there is much hemp sown every year, on the same spot; spun; and made, by domestic fabrics, into cloth for home uses. Spinning is 10*s.* the pound; and it is an uncommon spinner that can do a pound in a day; in common but half a pound.

LORRAINE.—*Luneville.*—Hemp is cultivated every where in the province, on rich spots; hence there is much of it; and some villages have been known to make a thousand crowns in a year of their thread and linen. If it is wished that the hemp be very fine, they do not water, but only spread it on the grafs; but, in general, water it. Use their own seed, and furnish much to their neighbours; but have that of flax from Flanders. Sow beans among flax, for supporting it; others do this with small boughs of trees. Some also sow carrots among their flax; which practice, I suppose, they borrowed from Flanders. Hemp is always dunged, and always sown on the same spots, which sell at the same price as gardens; a common and execrable practice in France. A journal gives, on good land, 95 lb. and 103 lb. of *toup*; price last year, ready for spinning, 16*s.* the lb.; the *toup* 11*s.* now higher: also 2 *razeau* of seed (each 180 lb. of wheat). The journal equals 65 English perches.

ALSACE.—*Straßbourg.*—Product 3 quintals, at 27 liv. the quintal, the arpent (51. 12*s.* per English acre).

Schelestat.—Produce 2 quintals, ready for spinning, at 36 liv. to 48 liv. the quintal (51. 16*s.* 3*d.* per English acre). Water it for cordage, but not for linen; grafs it only, as whiter.

AUVERGNE.—*Clermont.*—In the mountains; price of hemp, ready to spin, 15*s.* to 18*s.* the lb.; spun, 24*s.* fine, 30*s.*

Izoir.—Produce of hemp, per cartona, 150 lb. rough, at 5*s.* the lb. which is 113 lb. ready for spinning; but bad hemp loses more. The *feterée* is 8 cartoni, of 150 toises, or 43,200 feet. Hemp grounds sell equally with gardens (111. 11*s.* 6*d.* per English acre).

Briude.

Briude.—Hemp yields a quintal, raw, per cartona; female is worth 40 liv. the quintal, male 30 liv.; also 8 coups of seed, at 6*s*. Average produce 35 liv. or 36 liv. in all.

DAUPHINE.—*Loriol.*—Chinese hemp succeeds well with Mons. Faujas de St. Fond, and perfects its seed, which it rarely does in the King's garden, at Paris. He thinks it an error to sow it, like other hemp, in the spring; for he is of opinion, that it would seed even in England, if sown in autumn. He has found, by experiment, that it is excellent for length and strength, if sown thick enough to prevent its spreading laterally, and to make it rise without branching.

PROVENCE.—*Marseilles.*—Price of hemp: Riga, first quality, 36 liv. the quintal; ditto, second quality, 33 liv. Ancona, first quality, 33 liv.; ditto, second quality, 30 liv. to 31 liv. Piedmont, 3 group, 26 liv.; 4 group, 28 liv.

From these notes it appears, that hemp or flax is cultivated in small quantities through every part of France; generally for the uses of domestic manufactures among the lower classes. A very interesting political question arises on those diffused fabrics, and on which I shall offer a few observations, under the chapter of manufactures.

Madder.

ALSACE.—*Straßbourg Fertenheim.*—Much of this plant is cultivated in various parts of Alsace; where the soil is very deep and rich, especially on that which they call *limoneuse*, from its having been deposited by the river. They dig the land for it three feet deep, and manure highly: the rows are six to nine inches asunder, and they hoe it clean thrice a summer. The produce of an arpent, of 24,000 feet, is 40 quintals green, before drying, and the mean price 6 liv. the quintal (16*l.* 12*s.* 6*d.* per English acre). Such is the account I received at Straßbourg; but I know enough of this plant, by experience, to conclude, that such a produce is absolutely inadequate to the expences of the culture, and therefore the crop is probably larger than here stated; not that the low rate of labour should be forgotten.

DAUPHINE.—*Piere Latte.*—Planted here in beds; but it is very poor, and apparently in a soil not rich enough.

To Orange.—Much ditto; all on flat beds, with trenches between, but weedy and ill cultivated. The price is 27 liv. the quintal, dry. Some just planted, and the trenches very shallow: dig at three years old. Price 24 liv the quintal, dried in the sun. The roots are small and poor.

Avignon.—Price 24 liv. to 30 liv. but there is no profit if it be under 50 liv. It is three years in the land. Sow wheat after it; but if it were not well dunged
the

the crop is poor. A good deal on flat beds, 8 feet wide, with trenches between, two broad and two deep, which are dug gradually for spreading on it.

Lille.—An eymena in three years gives 5 quintals, at 20 liv. to 24 liv. the quintal, but a few years ago was 50 liv. to 70 liv. The expences are very high, 120 liv. At 4l. a cwt. which equals a French quintal, madder paid a proper profit for inducing many English cultivators to enter largely into it; but falling to 40s. and 50s. per cwt. some were ruined, and the rest immediately withdrew from it. But in France we find they carry on the culture; it is however weakly and poorly done; with so little vigour, that common crops, well managed, would pay much better.

Maiz.

The notes I took on the subject of this noble plant were very numerous; but as there is reason to believe that its culture cannot be introduced, with any prospect of advantage in this island, I shall make but a few general observations on it.

In the paper on the climate of France, I have remarked, that this plant will not succeed in common cultivation north of Luneville and Ruffec, in a line drawn diagonally across the kingdom; from which interesting fact we may conclude, that a considerable degree of heat is necessary to its profitable cultivation, and that all ideas of introducing it into England, except as a matter of curiosity, would be vain. It demands a rich soil, or plenty of manure, and thrives best on a friable sandy loam, but it is planted on all sorts of soils, except poor gravels. I have seen it on sands, in Guienne, that were not rich, but none is found on the granite gravels of the Bourbonnois, though that province is situated within the maiz climate. The usual culture is to give two or three ploughings to the land; sometimes one ploughing, and one working with the heavy bident-hoe; and the seed is sown in rows at 2 feet or 2½, by 1½ or 2; sometimes in squares. Some I have seen near Bagnere de Bigore, in rows, at 3 feet, and 18 inches from plant to plant. The quantity of seed in Bearn, is the eighth part, by measure, of the quantity of wheat sown. It is universally kept clean by hoeing, in most districts, with such attention as to form a feature, in their husbandry, of capital merit. In August, they cut off all that part of the stalk and herbage which is above the ear, for feeding oxen, cows, &c. and it is perhaps the richest and most saccharine* provender that the climate of France affords; for wherever maiz is cultivated, no lean oxen are to be seen; all are in high order. The crop of grain is, on an average, double the quantity commonly

* A real sugar has been made from it. *Spec. de la Nature.* Vol. ii. p. 247.

reaped of wheat; about Navareen, in Bearn, more than that; and there the price (1787) is 54*s.* to 55*s.* the measure, holding 36 lb. to 40 lb. of wheat; but in common years 18*s.* to 20*s.* Whether or not it exhausts the land is a question; I have been assured, in Languedoc, that it does not, but near Lourde, in Guienne, they think it exhausts much. Every where the common management is to manure as highly as possible for it. In North America it is said to exhaust considerably*; Monsr. Parmentier contends for the contrary opinion†: wherever I found it, wheat succeeds it, which ought to imply that it is not an exhausting crop. The people in all the maiz provinces live upon it, and find it by far more nourishing than any bread, that of wheat alone excepted. Near Brive, in Quercy, I was informed that they mix one-third rye and two-thirds maiz to make bread, and, though yellow and heavy, they say it is very good food. A French writer says, that, in Bresse, maiz cakes cost 9 $\frac{2}{3}$ deniers the pound, but that a man eats double the quantity of what he does of bread made of wheat‡. A late author contends, that it is to be classed among the most wholesome articles of human food||.

Every one knows that it is much cultivated in North America: about Albany, in New York, it is said to yield a hundred bushels from two pecks of seed§; and that it shoots again after being killed by the frost, even twice; that it withstands the drought better than wheat (*this is questionable*); does much better on loose than on stiff soils, and not well at all on clay. In South Carolina it produces from 10 to 35 bushels per acre¶. On the Mississippi two negroes made 50 barrels, each 150 lb.** In Kongo, on the coast of Africa, it is said to yield three crops a year††. According to another account, great care is taken to water it where the situation will admit‡‡; this I have seen in the Pyrennees; but most of the maiz in France, even nineteen parts in twenty, are never watered. About Douzenac, in the Limousin, they sow it thick to mow for soiling; and at Port St. Marie, on the Garonne, they do the same, after the harvest of other grain, which is the most profitable, and indeed admirable husbandry. This is the only purpose for which it can be cultivated in northern climates. It might be sown in England the first week in June, and mown the end of August, time enough to catch a late crop of turnips, or as a preparation for wheat.

* *Mitchel's Present State of Great Britain and N. America*, p. 157. † *Memoire sur le Mais*. 4to. 1785. P. 10. ‡ *Observations sur l'Agriculture*, par M. Varenne de Fenille, p. 91.

|| *Instruction sur la Culture & les Usages des Mais*. 8vo. 1786. P. 30. § *Kalm's Travels in North America*. Vol. ii. p. 245. ¶ *Description of South Carolina*. 8vo. 1761. P. 9.

** *Du Pratz History of Louisiana*. Vol. i. p. 306. †† *Modern Univ. Hist.* Vol. xvi. p. 25.

‡‡ *Mem. de l'Acad. des Sciences*. 1749. P. 471.

Mustard.

ISLE OF FRANCE.—*Petiviers*.—At Denainvilliers, near this place, I saw them mowing mustard, in full blossom, to feed cows with.

ARTOIS.—*Lillers*.—Much all the way to Bethune; sow spring corn after it.

Orchards.

NORMANDIE.—*Falaise*.—Many apple and pear trees are scattered over the country. They never plant them on the best lands, as they are convinced that the damage to the corn, &c. is at least equal to the value of the cyder; but on the poorer soils they consider it as an improvement, forming a fourth, or third, and in some cases even a half of the value of the land.

BRETAGNE.—*Doll*.—A cyder country; but reckon the trees at no real value beyond that of the land, for they spoil as much as they produce.

Rennes.—A common proportion is to plant thirty trees upon a journal (about five roods English), which if well preserved, will yield, on an average, 5 to 10 barriques of cyder every year; and the mean price 12 liv. the barrique, which is 120 pots; this year good orchards give 40 or 50 per journal, but they have produced none, or next to none, for four years past. The damage the trees do to the corn is so great, that, in common expression, they say they get none. The cyder is made by the presses, which is of the same kind as Jersey, I suppose, brought from this country. The ground apples, and wheat or rye straw, in layers under the presses, and reduced to such a desiccated state that they will burn freely immediately out of the presses.

LORRAINE.—*Blamon to Savern*.—The whole country spread with fruit trees, apples, pears, &c. from 10 to 40 rods asunder.

AUVERGNE.—*Vaires*.—The valley of this place, situated in the Limagne, so famous in the volcanic history of France, is much noted for its fine apples, particularly the *rennet blanche*, the *rennet gris*, *calville*, and *apy*, all grafted on crab stocks.

Olives.

ROUSSILLON.—*Bellegard to Perpignan*.—Reckoned to pay 1 liv. each tree.

Pia.—The land under them fallowed every other year, and sown with corn: they are pruned in the fallow year, yielding no fruit; a crop being only in the corn year.

LANGUEDOC.—*Narbonne*.—Olives pay, in general, 3 liv. each tree per annum; some 5 liv. Many fields of them are planted in rows, at 12 yards by 10.

Beziers.

Beziers.—The trees on the farm, that was Monf. L'Abbé Rozier's, are 17 yards by 2.

Pinjean.—Some trees so large and fine are known to give 84 lb. of oil in a year, at 10*s.* the lb. or 42 liv.; but they reckon, in common, that good trees give 6 liv. one with another; this epithet *good*, shews that the common average of all trees is much lower. In planting, if they mean to crop the land with corn, in the common manner, that is, one year in two, the other fallow, they put 100 trees on 8 *feterées* of land; but if they intend to have no corn at all, the same number on 4 *feterées*: under corn, the 8 *feterées* yield 40 *septiers* of corn, each 100 lb. at 9 liv. (7*s.* 10½*d.*). The *feterée* is about half an acre, as I conclude, from the best intelligence I could procure. This proportion is 100 trees on four English acres, or 25 per acre: if they were all good, the produce in oil would be 150 liv. and of wheat 90 liv.—in all 240 liv. or 10*l.* 10*s.*; the half only of which is annual produce, or 5*l.* 5*s.* which seems not to be any thing very great, even supposing the trees to be all good, which must be far from the fact.

Montpellier to Nîmes.—The trees are 3 rods asunder, by 1½; also 2 by 1½; both among vines; also 2 square; also 1 by 1½.

Pont de Gard.—Planted at 1 rod and 1½; their heads almost join. They are all pruned to flat round heads, the center of the tree cut out, cup-fashion; and these formal figures add to the ugliness of the tree.

VIVARAIS.—*Aubenas.*—In passing south from Auvergne, here the first olives are met with.

DAUPHINE.—*Piere Latte to Avignon.*—Many; but seven-eighths dead from the frost, and many grubbing up.

PROVENCE.—*Aix.*—Land planted with olives sells at 1000 liv. the *carterée*, whilst arable only 600 liv. but meadows watered 1200 liv. Clear profit of a *carterée* of olives, 40 liv. (21,600 feet, at 40 liv. it is 3*l.* 2*s.* 1*d.* per English acre). Gathering the olives 40 liv. 10*s.* the quintal: pressing 2 liv.: cultivation 18 liv. the *carterée*: the wood pays the pruning.

Tour d'Aigues.—The olive, pomegranate, and other *hard* trees, as they are called here, bear fruit only at the end of the branches; whence, they conceive, results the necessity of their being pruned every other year. Thirty years ago, the common calculation of the produce, per olive, was 5*s.* but now, the price being double, it may be supposed 10*s.*

Toulon.—They have great trees in this neighbourhood that are known to yield 20 liv. to 30 liv. a tree, when they give a crop, which is once in two years, and sometimes once in three. Small trees yield 3 liv. 5 liv. and 6 liv. each, and are much more profitable than mulberries, for which tree the soil is too dry and stoney. Olives demand as great an expence in buildings, presses, coppers, backs, &c. as vines. Pressing comes to 3 liv. a barrel. Crop of a large tree, 8

to 10 pannaux. Olives, in Provence, never pruned into the hollow cup-form, which is so general in Languedoc: they appear here in their natural form.

Hyerès.—They produce considerably in twenty or thirty years, and some have been known to be a hundred years old. I saw, going to *Notre Dame*, some that resisted the frost of 1709. A good tree, of thirty years, gives, when it bears, 3 pannaux of olives; the pannaux holds 30 lb. to 32 lb. of wheat, and the common price is 24*s.* the pannaux. They have great trees, that give a *mot*, or 20 pannaux, or 24 liv. each tree. When fields, planted with olives, are bought, they are measured by the square canne or toise; a canne of good land, well planted, 30*s.*; midling, 20*s.*; bad, 10*s.*; but there are some that sell to 60*s.*; consequently a middling arpent is 900 liv.

Antibes.—The largest trees I have seen in France are between this place and the Var, as if the near approach to Italy marked a vegetation unknown in the rest of the kingdom.

The culture of this tree is found in so small a part of France, that the object is not of very great consequence to the kingdom; one should, however, remark, that in Provence, where the best oil in Europe is made, there might be twenty trees to one that is found there; whence we may conclude, that if it were so profitable a husbandry, as some authors have represented, they would be multiplied more. The most important point is, their thriving upon rocky soils and declivities, impenetrable to the plough; in which spots too much encouragement cannot be given to their culture.

Oranges.

PROVENCE.—*Hyerès.*—This is, I believe, the only spot in France where oranges are met with in the open air; a proof that the climate is more temperate than Rouffillon, which is more to the south; the Pyrennees are between that province and the sun; but Hyerès lies open to the sea; so indeed does the coast of Languedoc; and so does Antibes; but there is a peculiarity of shelter at Hyerès, from the position of the mountains, that gives this place the advantage. I always, however, doubt whether experiments have been made with sufficient attention, when these nice discriminations are pretended, that are so often taken on trust without sufficient trial. The dreadful frost of last winter, which destroyed so many olives, attacked the oranges also, which were cut down in great numbers, or reduced to the mere trunk; most of them, however, have made considerable shoots, and will therefore recover.

The King's garden here, in the occupation of Monsr. Fine, produced, last year, 21,000 liv. in oranges only, and the people that bought them made as much by the bargain; the other fruits yielded 700 liv. or 800 liv.: the extent of
this

this garden is 12 arpents; this 1808 liv. per arpent, besides the profit (94l. 7s. 7d. per English acre). A fine tree will produce 1000 oranges, and the price is 20 liv. to 25 liv. the 1000, for the best; 15 liv. the midling; 10 liv. the small. There are trees here that have produced to the value of two louis each; and what is a more convincing proof of great profit, a small one, of no more than seven or eight years, will yield to the value of 3 liv. in a common year. They are planted from the nursery at two or three years old, and at that age are sold at 30s. each; and it is thought that the flowers, sold for distilling, pay all the expences of cultivation; they must, however, be planted on land capable of irrigation, for if water be not at command, the produce is small.

Pomegranates.

PROVENCE.—*Hyeres*.—The hedges are full of them, and they are planted singly, and of small growth: the largest fruit sell at 3s. or 4s. each; middling, 1s.; little ones, 1 liard. A good tree, of ten or fifteen years, will give to the value of 2 liv. or 3 liv. a year.

Pines.

GASCOIGN.—*Bayonne*.—The great product of the immense range of waste, as it is commonly called, *landes*, is resin: the *pinus maritimus* is regularly tapped, and yields a produce, with as much regularity as any other crop, in much better soils. I counted from fifty to eighty trees per acre, in some parts; but in others, from ten to forty; those with incisions for the resin are from 9 to 16 inches diameter. Some good common oak on this sand, 12 to 14 inches diameter, but with bodies not longer than from 8 to 10 or 12 feet.

St. Vincent's.—Here pines are cut for resin, at the age of fifteen to twenty years; the first year at about 2 feet from the ground, the second to 4 feet, the third to 6 feet, and the fourth to 8 or 9 feet; and then they begin again at bottom, on another side of the tree, and continue thus for 100 years: the annual value per annum in resin, 4s. or 5s. When they yield no longer, they cut into good plank, not being spoiled by tapping. Much tar also is made, chiefly of the roots. Cork trees are barked once in seven years, and yield then about 15s. or about 2s. per annum. Men are appointed, each to a certain number of trees, to collect the resin, with spoons, out of the notches, cut at the but-end of the tree to receive it.

Dax.—Pines pay 4s. a year in resin. Pine woods, with a good succession of young ones; from 1½ rod to 3 asunder.

Tartas.—Several persons united in asserting, that the pines give, one with another, 4s. to 5s. each, from 15 to 100 years old, and are then sold, on an

average, at 3 liv. each; that taking the resin was so far from spoiling the tree, that it was the better, and cut into better planks. This surprising me, I sought a carpenter, and he confirmed it*. They added, that an arpent of pines was worth more than an arpent of any other land in the country; more even than of vines: that it would sell, according to the trees, from 500 liv. to 1000 liv. while the inclosed and cultivated sands would not yield more than 300 liv. or, at most, than 400 liv. The arpent, I found, by measuring a piece of 2 arpents, to be 3366 English yards (500 liv. is 31l. 10s. per English acre).

St. Severe.—Pass several inclosures of sandy land, resembling the adjoining wastes, sown with pines as a crop; they are now of various heights, and very thick. See some very good chestnut underwood on a white sand.

GUIENNE.—Langon.—Many of the props used for their vines here, are young pines, the thinnings of the new sown ones; are sold for 36 liv. to 40 liv. the thousand, or twenty bundles, each fifty pines.

Cubzac to Cavignac.—On the poorest lands sow pines, which are not an unprofitable article of culture. At five years old they begin to thin them for vine props; and the small branches are sold in faggots. At fifteen years the produce is more considerable; and at twenty-five the best trees make boards for heading casks. I saw a journal and half, the boards of which yielded 1200 liv. They sow 135 lb. of wheat seed on a journal. Several crops of sown pines very thick.

BRETAGNE.—Quimperley to L'Orient.—Pines abound in this country, and seem to have sown themselves all around; but none are cut for resin.

To Vannes.—Such a scattering of them, that I apprehend all this country was once pine land.

AUVERGNE.—St. George.—In the mountains, see immense pine planks laid by way of fences, not less than 60 feet long, and 2 and 2½ broad.

Fix.—Dr. Coiffier has them in the mountains 80 feet high, and 10 feet round.

PROVENCE.—Cuges to Toulon.—In the rocky mountains of this coast, there are pines, and such as are of any size are cut for resin; but they stand too thin to yield an acreable produce of any account.

Cavalero to Frejus.—The mountains here are covered chiefly with pines, and have a most neglected desert appearance.

To Estrelles.—The same; and hacked and destroyed almost as badly as in the Pyrennees.

Pines are justly esteemed a profitable crop *for the landlord*, for they yield a regular and certain revenue, at a very little charge; no repairs, and no losses, by

* M. Secondat makes the same observation, *Mem. sur l'Hist. Nat. du Chêne*. Folio. 1785. P. 35. The same assertion is made in *Mémoire sur l'Utilité du defrichement des Terres de Castelnau-de-Médoc*. 4to. 1791. *Réponse au Rapport*, p. 27.

failure of tenants. But, in regard to the nation, pines, like most of the poor woods of France, should be reckoned detrimental to the public interest, since a kingdom flourishes by *gross produce*, and not by *rent*.

Poppies.

ARTOIS.—*Lillers*.—Much cultivated for oil: they are called here *zulette*. Get as good wheat after them as after coleseed.

ARAS.—Many here; they are reckoned to yield more money per arpent than wheat; equal to coleseed; which, however, is a very uncertain crop.

LORRAINE.—*Nancy to Luneville*.—Some fine pieces on a poor gravel.

ALSACE.—*Savern to Wiltenheim*.—Many poppies; some fine crops, and very clean.

Strasbourg.—Product three sacks, at 24 liv. per arpent, of 24,000 square feet (4l. 19s. 9d. per English acre). Manure for them, and sow wheat after.

Our ideas of the exhausting quality of certain plants, are, at present, founded, I believe, but upon that half-information which is scarcely a degree above real ignorance. It is a common observation, that all plants whose seeds yield oil, are exhausters of soil; an observation that has arisen, from the theory of oil being the food of plants. Experiments upon both have been so few and unsatisfactory, as to be utterly insufficient for the foundation of any theory. Coleseed, seeded in England, is almost generally made a preparation for wheat; so it is in France, and we here find the same effect with poppies. It can hardly be believed, that wheat, which demands land in heart as much as almost any other crop, should be made to follow such exhausting plants as the theory of oil would make one believe these to be; it is the organization of the plant alone that converts the nourishment into oil; which, in one plant, turns it to a saccharine substance, and, in another, to an acid one; but the idea that plants are fed by oil, and that they exhaust in proportion to their oil, is absolutely condemned by the olive, which yields more oil than any other plant, and yet thrives best on dry arid rocky soils, of absolute poverty, as far as oil is concerned. We shall be wholly in the dark in this part of agriculture, treated as a science, till experiments have been greatly multiplied.

Potatoes.

ANJOU.—*Angers to La Fleche*.—More than is common in France.

LORRAINE.—*Pont a Mouson*.—Throughout all this part of Lorraine there are more potatoes than I have seen any where in France; twelve acres were at once under the eye.

To Nancy.—Many cultivated through all this country, but degenerated, by being sown too often on the same land; and for want of new sorts. A journal yields 20 toulins, or about 24 bushels English; and 2½ journals are equal to an arpent de France, which makes the acreable produce miserable. Price now, 3 liv. the toulin; was only 25s.

Luneville.—More still; they plant them, after one ploughing, in April: for feed, cut the large ones only; but sell the smaller ones uncut. Always dung much. Every man that has a cow, keeps the dung carefully for this crop; and such as have no land, plant on other people's, without paying rent, that being the preparation for wheat: the crop of that grain is, however, very moderate, for the potatoe pumps much, to use the French expression,—*i. e.* exhausts greatly. Poor light soils answer best for them, as they are found not to do on strong land. Product per journal, 30 to 50 *rasaux*, which measure contains 180 lb. of wheat. I found an exact journal, by stepping, to be 1974 English yards, or about 65 rods. At 40 *rasaux*, each 3 English bushels, it is nearly about 300 bushels English per acre. The price is now, 7 liv. the *razal*, heaped; when low, 3 liv.; and in common. 4 liv. 10s. The culture increases much.

ALSACE.—*Savern to Wiltenheim.*—Many, and good potatoes.

Strasbourg.—Produce of an arpent, of 24,000 feet, 75 sacks to 100, at 36s. to 60s. (at 2½ liv. and 90 sacks, it is 15l. 10s. 7d. per English acre). Sow wheat after them, if manured, otherwise barley. In the mountains they pare and burn for them.

Schelestat.—Produce 50 or 60 sacks, at 3 liv. but 4 liv. or 5 liv. sometimes (55 sacks, at 3½ liv. are 13l. 5s. 10d. per English acre). In planting, they think the difference is nothing, whether they be set cut or whole. The people eat them much.

Befort.—The culture continues to this place.

FRANCHE COMPTE.—*Besançon.*—And a scattering hither.

Orechamps.—Now lose the culture entirely.

AUVERGNE.—*Villeneuve.*—In these mountains they are cultivated in small quantities.

VELLAY.—*Le Puy to Pradelles.*—Ditto.

To Thuytz.—They are met with every where here.

DAUPHINE.—*St. Fond.*—Many are cultivated throughout the whole country; all planted whole; if sliced, in the common manner, they do not bear the drought so well. They are plagued with the curl.

These minutes shew, that it is in very few of the French provinces where this useful root is commonly found; in all the other parts of the kingdom, on inquiring for them, I was told, that the people would not touch them: experiments have been made, in many places, by gentlemen, with a view to introduce them

them for the poor, but no efforts could do it. The importance, however, would be infinite, for their use in a country in which famine makes its appearance almost periodically, arising from absurd restrictions on the corn trade. If potatoes were regularly cultivated for cattle, they would be ready for the poor, in case of very high prices of wheat; and such forced consumption would accustom them gradually to this root; a practice in their domestic œconomy, which would prevent much misery, for want of bread. This object, like so many others, can only be effected by the exhibition of a large farm, highly stocked with cattle, by means of potatoes; and the benefit, in various ways, to the nation would make such an exhibition exceedingly advantageous. But such establishments come not within the purview of princes or governments in this age: they must be enveloped in the mist of science, and well garnished with the academicians of capitals, or nothing can be effected.

Racine de Disette.

ISLE OF FRANCE.—*Dugny*.—This plant, the *beta cyclo altissima* of Linnæus, Monf. Cretté de Paleuel has cultivated with attention: he has tried it by transplantation, as directed by Monf. l'Abbé de Commerell; also by sowing the seed broadcast where it remains; and likewise seed by seed, in squares of 15 inches; and this last way he thinks is the best and most profitable. The common red beet, which he has in culture, he thinks yields a larger produce; but it does not yield so many leaves as the other, which is stripped thrice in the summer by the hand, an operation which may answer where labour is excessively cheap; but I have my doubts whether the value in England would equal the expence of gathering and carriage. Cows and hogs, Monf. Cretté has found, will eat the roots readily, but he has made no trial on it in fattening oxen or feeding sheep.

ALSACE.—*Schelestat*.—The culture is common in this country: I viewed three arpents belonging to the master of the post, which were good and clean. They gather the leaves by hand for cows, and then return and gather again, and the roots are the best food for them in winter; they come to 8 lb. and 10 lb. and are sown and planted like tobacco.

Rice.

DAUPHINE.—*Loriol*.—Sixty years ago the plain of Livron, one mile from Loriol, and half a league from St. Fond, more than a league long and a league broad, was all under rice, and succeeded well, but prohibited by the parliament, because prejudicial to health.

Saffron.

Saffron.

ANGOUMOIS.—*Angouleme*.—The best land for this crop is reckoned that which is neither strong nor stoney, but rich and well worked; plant the rows six inches asunder, and two inches from plant to plant; sow wheat over the planted land, and gather the Saffron among the wheat; blossom at All-Saints, when they gather it. In a good year, and on good land, a journal yields 3 lb. which sells, when dear, at 30 liv. per lb. but is sometimes at 16 liv.: lasts two years in the ground, after which it is removed. They assert, that the culture would not answer at all if a farmer had to hire labour for it: all that is planted is by proprietors.

Tobacco.

FLANDERS.—Most farmers, between Lille and Montcassel, cultivate enough for their own use, which is now (November) drying under the eaves of their houses.

ARTOIS.—*St. Omers*.—Some pieces of tobacco, in double rows, at 18 inches and 2 feet intervals, well hoed.

Aire.—A crop is worth three times that of wheat on the same land, and at the same time prepares better for that grain than any thing.

ALSACE.—*Straßbourg*.—Much planted in all this rich vale, and kept very clean. Product 8 to 10 quintals per arpent of 24,000 feet, at 15 liv. to 30 liv. per quintal (9 at 23 liv. is 14l. 6s. 2d. per English acre). Sow wheat after it, and the best wheat is after tobacco and poppies.

Benfeldt.—Great quantities here, and all as clean as a garden.

Schelestat.—Produce 6 quintals to 8 per arpent, at 16 liv. the quintal (8l. 15s. 7d. per English acre). This they reckon the best crop they have for producing ready money, without waiting or trouble. There are peasants that have to 600 quintals. They always manure for it. They sow it in March on a hot bed covered with mats; begin to plant in May, and continue it all June and the beginning of July, at 18 inches or 2 feet square, watering the plants in a dry season. When 2 feet high, they cut off the tops to make the leaves spread. Their best wheat crops follow it.

Tobacco, as an object of cultivation, appears in these notes to very great advantage; and a respectable author, in France, declares, from information, that, instead of exhausting the land, it improves it like artificial grasses*; which seems to agree with my intelligence; yet the culture has been highly condemned by others. Mr. Jefferson observes thus upon it; “it requires an extraordinary

* *De l'Administration Provinciale par M. le Trone. Tom. i. p. 267.*

degree of heat, and still more indispensably an uncommon fertility of soil: it is a culture productive of infinite wretchedness: those employed in it are in a continued state of exertion, beyond the powers of nature to support: little food of any kind is raised by them; so that the men and animals, on these farms, are badly fed, and the earth is rapidly impoverished. The cultivation of wheat is the reverse in every circumstance; besides cloathing the earth with herbage and preserving its fertility, it feeds the labourers plentifully; requires from them only a moderate toil, except in the season of harvest; raises great numbers of animals for food and service, and diffuses plenty and happiness among the whole. We find it easier to make an hundred bushels of wheat than a thousand weight of tobacco, and they are worth more when made*." This authority is respectable; but there are circumstances in the passage which almost remove the dependence we are inclined to have on the author's judgment. The culture of wheat preserving the fertility of the earth, and raising great numbers of animals! What can be meant by this? As to the exhausting quality of wheat, which is sufficient to reduce a soil almost to a *caput mortuum*, it is too well known, and too completely decided, to allow any question at this time of day; and how wheat is made to raise animals we must go to America to learn, for just the contrary is found here; the farms that raise most wheat have fewest animals; and in France, husbandry is at almost its lowest pitch, for want of animals, and because wheat and rye are cultivated, as it were, to the exclusion of other crops. Tobacco cannot demand an uncommon degree of heat, because it has been cultivated on a thousand acres of land successfully in Scotland; and as to the demanding of too great exertions, the free hands of Europe voluntarily addict themselves to the culture; which has nothing in it so laborious as reaping wheat. I take the American case to be this; ill husbandry, not tobacco, exhausted the land; they are now adopting wheat; and, if we may judge from the notions of the preceding quotation, that culture will, in a few years, give the finishing stroke to their lands; for those who think that wheat does not exhaust, will be free in often sowing it, and they will not be long in finding out what the result will prove.

Monf. Bolz, in Swisserland, says, that they are disgusted with the culture of tobacco, because it exhausts their lands: half an arpent gave 5 to 6 quintals of leaves†. Estimated grossly, this may be called a thousand weight per acre, which Mr. Jefferson compares with 100 bushels of wheat; a quantity that would demand, in England, four acres of land to yield; and, as American crops do not yield in that proportion, it is one acre of tobacco being as expensive as five or six of wheat, which surpasses comprehension.

* *Notes on the State of Virginia.* P. 278.

† *Mem. de la Société Oeconomique de Berne.* 1763. Tom. I. p. 87.

The Strasbourg produce of 9 quintals, in the notes above, equal 15 cwt. per English acre. The Schelestat produce of 7 quintals is about 12 cwt. per acre.

Dr. Mitchel, many years before Mr. Jefferson, gave the same account of the exhausting quality of tobacco*.

The cultivation is at present spreading rapidly into countries that promise to be able to supply the world. In 1765, it was begun to be cultivated in Mexico, and produced, in 1778, to the value of 800,000l. and in 1784, 1,200,000l.†

Turnips.

GUIENNE.—*Anspan to Bayonne.*—*Raves* are, in these waste tracts, at the roots of the Pyrennees, much cultivated; they manure for them, by burning straw, as described under the article manure; weed, and, as they told me, hoe them; and have some as large as a man's head. They are applied entirely to fattening oxen. Maiz is sown after them. The people here knew of the orders given by the King, for cultivating this plant, but I could not find they had had any effect. The practice obtained here before the two last severe years, which were the occasion of their increasing it, much more than any orders could do.

FLANDERS.—*Valenciennes to Orchies.*—Many fields of this root, but quite thick, though it was said they have been hoed; these are all after-crops, sown after corn.

NORMANDIE.—*Caen.*—In going to Bayeaux, many, both flourishing and clean, though too thick; but, on inquiry, found them all for the market, and none for cattle or sheep. I thought the colour of the leaf differed from our own, and got off my horse more than once to examine them. They are the *raves* of the south of France; the roots, which ought to have been of a good size, were carrot-shaped and small.

BRETAGNE.—*Belle-Isle to Morlaix.*—Here is an odd culture of *raves* amongst buckwheat; sown at the same time, and given to cows and oxen, but the quantity is very inconsiderable.

Morlaix.—Get their best turnips after flax, sometimes to a very good size, but, for want of sufficient thinning the crops, in general, very small roots must be produced; yet the leaves large, healthy, and vigorous. They sow them also among buckwheat; but the product is trifling, and the use but momentary, as they plough the land for wheat.

ANJOU.—*Migniame.*—If one were to attend only to conversation, without going into the fields, a stranger would be persuaded that the culture of turnips

* *Present State of Britain and North America.* 8vo. 1767. P. 149, 151.

† *Bourgoanne's Travels in Spain*, vol. i. p. 368.

flourished here: they actually give some, and cabbages too, to their cows, for every man has a scrap; but sown quite thick, and the largest I saw not bigger than a goose egg; in general not a fourth of that size; and the largest piece I saw was half an English acre. They have, in like manner, patches of a sort of kale, which is the *chou de Poitou*; this is instead of the *chou d'Anjou*, of which the Marquis de Turbilly speaks so much; and which is quite neglected in this country now, in favour of this Poitou cabbage, that is found to produce many more leaves. To me it, however, appears inferior to the *chou de Vache* of Flanders.

To La Fleche.—A scattering of miserable *raves* all the way.

ALSACE.—*Schelestat to Colmar.*—Some scattered pieces, but in very bad order, and none hoed, which they ought to have been three weeks before I saw them.

AUVERGNE.—*Issoire.*—*Raves* are cultivated for cattle, but on so small a scale, that they scarcely deserve mention. They sow them also among buckwheat, which is *drawn by hand, when in blossom, for forage*, and the *raves* left. No hoeing, but some are weeded.

Brioude.—Many *raves*, and cultivated for cattle: common to 2 lb. weight.

St. George's to Villeneuve.—Many *raves*, but miserable poor things, and all weeds.

Perhaps the culture of turnips, as practised in England, is, of all others, the greatest desideratum in the tillage of France. To introduce it, is essential to their husbandry; which will never flourish to any respectable extent, and upon a footing of improvement, till this material object be effected. The steps hitherto taken by government, the chief of which is distributing the seed, I have reason to believe, failed entirely. I sent to France, at the request of the Count de Vergennes, above an hundred pounds worth of the seed; enough for a small province. When I was at Paris, and in the right season, I begged to be shewn some effects of that import; but it was all in vain. I was carried to various fields, sown thick, and absolutely neglected; too contemptible to demand a moment's attention. Not one acre of good turnips was produced by all that seed. It is with turnips, as in many other articles; a great and well cultivated English farm, of 700 or 800 acres, should be established, on an indifferent soil; and 200 acres of turnips cultivated upon it, and eaten on the land by sheep, should every year be exhibited; and a succession of persons educated on such a farm, dispersed over the kingdom, would do more to introduce the culture than all the measures yet attempted by government.

Walnuts.

BERRY.—*Verson to Vatan.*—Many of these trees spread over the country, which yield a regular revenue by oil.

QUERCY.—*Souillac*.—Walnut-oil cake the finest food of all for fattening oxen. They export pretty largely of this oil, the trees being every where.

ANGOUMOIS.—*Rignac*.—Walnuts spread over almost every field.

Ruffec.—A common tree yields a boisseau of nuts; sold at 3 liv. or 4 liv.; but a good tree 3 boisseau. All for oil, which the people eat in soups, &c.

POITOU.—Many through all parts of the province, which I passed in crossing it. Oil universally made from them. This year (1787) all were so frozen, that the crop will be very small; sometimes get 16 boisseau a tree, even to 20 boisseau; the boisseau sells generally at 20*s*. There is, on an average, one tree to an acre. One tree gives 5 or 6 measures of nuts, and each measure makes something more than a pint of oil, which sells at 18*s*. or 20*s*.

ANJOU.—Across this whole province they are found every where, but none through Bretagne.

ALSACE.—*Isenheim*.—Great numbers spread all over the country; for oil.

BOURBONNOIS.—*Moulins*.—Some estates have a good many scattered trees; the oil sells at 12*s*. the lb.

AUVERGNE.—*Clermont*.—Many in every part of the country; a prime tree will, in a good year, give 20 lb. and even 30 lb. of oil; one of ten years 6 lb.; common price 6*s*. per lb.

Lempde.—Here they finish; as we advance from this village, no more are met with.

Various Plants.

QUERCY.—*Brives*.—Figs we met with here for the first time; they are scattered over the vineyards, and wrapped up in mats, to preserve them from frosts.

Creissensac.—*Gieyse* much cultivated here; it is the *lathyrus setifolius*. Also *jarash*, the *vicia latharoides*. They sow them both in September and the spring, which are generally used, mown green, for soiling.

Souillac.—They have no meadows in many districts of this country, but supply the want by the above-mentioned plants, which are always used green. They do not answer equally in hay, as it is said that the leaf falls off in drying.

Cabors.—Near this place meet with four new articles of cultivation; one a *vicia sativa* *varietas*; another the *cicer arietinum*; the third the *ervum lens*; and the fourth the *lupinus albus*.

Caussade.—Here the *trifolium rubens* is cultivated, and continues through all the Pyrennees.—On all these articles I must, however, observe, that they do not seem to equal, for soiling, the common winter-vetch, which we cultivate so much in England; nor lucern, so successfully sown in France.

GUIENNE.—*Triticum Repens*. Upon the banks of the Garonne I met women loaded with the roots of this plant, going to sell it at market; and they informed me it was bought to feed horses with. It is applied to the same use at Naples. It grows with great luxuriance at Caygan Solo, in latitude 7*; and being the great plague of English husbandry, may be called a universal grower. It seems, from a late account†, as if they cultivated it in the island of Nantucket, in America.

ISLE OF FRANCE.—*Dugny*.—Mons. Cretté de Paleuel gave me some notes of experiments he had made on various plants, in drying them for hay.

The *epilobium angustifolium* makes hay that is readily eaten by sheep, and loses half in drying. They are very fond of the hay of the *spirea ulmaria*, the *lithum salicaria*, *thalictrum vulgare*, *pucedanum silaus*, and *centaurea jacea*; all these lose half, when made into hay; the *althæa officinalis* two thirds. Mons. Cretté is of opinion, from his trials, that these plants may be very useful in cultivation, for hay. He found, at the same time, that an arpent of wet meadow gave 13,200 lb. of green herbage, which lost two-thirds in drying. An arpent of winter-vetches 17,800 lb. green.

The common sun-flower he has also cultivated; he plants it in rows, at two feet asunder, and one foot from plant to plant; an arpent containing 16,200 plants; the leaves he gives to cows, the flowers may be used for dying; of the stems he makes vine props, or for French beans, and afterwards burns them; and of the seed he makes oil, which leaves a cake good for fattening cattle. Six perch of land, each of 18 feet square, has given him 22 boisseau of seed, the boisseau $\frac{1}{2}$ of the septier, that contains 240 lb. of wheat, but the crop exhausts the land exceedingly, and small birds devour the seed greedily.

The same gentleman compared cabbages and potatoes, in alternate rows: an arpent gave (half the ground) 62 septiers of potatoes, which weighed 14,880 lb.; the cabbages on the same land, in number 5400, weighed 25,500 lb.

Dammartin.—Summer vetches cultivated here, they are mown for hay, and yield 800 to 1000 bottles per arpent; 1100 have been known.

ARTOIS.—*La Recouffe*.—Winter-vetches are found on every farm, on the good land from Calais to St. Omer: oats are mixed, to keep them up; and every one soils his horses in the stable.

A/s.—Some hops here.

ANJOU.—In the way from Angers to La Fleche, the number of citroules is very great, even to acres, and the crop extremely abundant; the metayers feed their hogs with them.

* *Forest's Voyage to New Guinea*, p. 16.

† *St. John's Letters of an American Farmer*. 8vo. 1782. P. 207.

AUVERGNE.—*Brioude*.—Jarouffe every where sown, the end of August or beginning of September, for hay.

DAUPHINE.—*Loriol*.—The *melilotus sibirica*, from Monsf. Thouin, at the King's garden, at Paris, makes, in the garden of Monsf. Faujas de St. Fond, a most superb figure; nobody can view its prodigious luxuriance without commending the thought of cultivating it for cattle. The *coronilla varia*, a common plant here, and of such luxuriance, that it is hardly to be destroyed. The *bedysarum coronarium* does well here.

PROVENCE.—*Cuges*.—Capers are here met with, for the first time, in going from Marseilles to Italy. It is a low bush, planted in squares of about 5 or 6 feet. This year they yield nothing, because damaged by the frost; but, in common, more profitable than vines; they mentioned 1 lb. per tree, at 30*s*.

Toulon.—Capers are not so profitable as vines. The bushes here are planted at 6½ or 7 feet square; and a good one will give 1½ or 2 lb. of capers; but the price varies prodigiously, from 30 liv. or 40 liv. to 120 liv. the quintal; average, 30 liv. or from 6*s*. to 20*s*. the pound.

Hieres *.—Capers here are planted in squares, at 6, 7, and 8 feet; each good bushel yields 2 lb. from 6*s*. to 24*s*. the pound; but, in a gross estimate of a whole crop, are not supposed to pay more than 6*s*. to 10*s*. per bushel.

Grasse.—Here is one of the most singular cultures to be met with, that of plants for making perfumes; whole acres of roses, tuberoses, &c. for their flowers, and a street full of shops for selling them: they make the famous otter of roses, as good and as clear as from Bengal; and it is said now to supply all Europe.

LYONNOIS.—The fromental of the French (*avena elatior*) is cultivated in this part of France, and in some districts of Franche Comté. The seed is commonly sold by the seedsmen, at Lyons, of whom I bought some to cultivate in England. The first person who mentioned it publicly was, I believe, Monsf. Miroudot, who wrote an essay upon it, in which he fell into an error, copied by many of his countrymen †, namely, that of calling it the ray-grass of the English. The great botanist, Haller, was mistaken in supposing it the *avena flavescens* ‡. King Stanislaus made some experiments on it in Lorraine. In Bretagne || it has been found to yield ten times the produce of common meadows. That it is very productive cannot be doubted, but it is a very coarse grass: how-

* The natural historian of Provence mentions a singular profit by this plant, at Hieres, of 200 cannes square giving 200 liv. net, while the same breadth, in common husbandry, only 18 liv. *Mem. pour servir a l'Hist. Nat. de la Provence*, par M. Bernard. 8vo. Tom. i. p. 329.

† *Bommarre Dict. d'Hist. Nat.* Tom. ii. p. 565; v. p. 225.

‡ *Mem. de la Soc. de Berne.* 1770. P. 16.

|| *Corps d'Observ. de la Soc. de Bretagne.* 1759, 1760. P. 44, 45.

ever, it merits experiments, and ought to be tried upon a large scale, as the qualities of plants cannot be ascertained upon a small one.

Citroules, in this province and the neighbouring ones, are cultivated largely, and rarely fail. They may be preserved until the beginning of January: oxen, cows, and hogs eat them freely; for lean cattle they are given raw, but commonly boiled for fattening: from 10 lb. to 20 lb. a day, given to cows, soon shews the effect in the quality of milk. For fattening an ox, in Bresse*, with them, they mix the citroule with bran or pollard, or flour of buckwheat, and boil them together, and give 35 lb. to 40 lb. to each beast per diem. In some places they apply them to feeding carp. The poor people eat them in soup, in most parts of the kingdom, but not in great quantities.

C H A P. XIV.

Of the Waste Lands of France.

SOLOGNE.—THERE is, in this province, such a large mixture of waste, even in the most cultivated parts, and cultivation itself is carried on upon such barbarous principles, that there will not be much impropriety in considering the whole as waste; to every spot of culture called a farm, a much greater proportion of rough sheep-walk and wood (eaten down and destroyed) is annexed; so that any good farmer, who got possession of 1000 or 1500 acres, would conclude the whole as waste, and treat it accordingly: by much the most unproductive and poorest part of such a tract would, in every case, be the lands at present under the plough. I may, in confirmation of this general idea, add, that there are many absolute wastes in France, that yield as good, and even a better produce than all Sologne, acre for acre. I know no region better adapted for a man's making a fortune by agriculture, than this; nothing is wanted but capital, for most of the province is already inclosed.

BERRY.—*Chateauroux*.—Leaving this place for the south, enter vast heaths of ling and furz, but much mixed with trefoils and grasses. Some small parts of these heaths are broken up, and so ill ploughed, that the broom and furz are in full growth. After this another heath, of several miles extent, where

* *Observ. et Exp. par Fenille, p. 86.*

the landlords will not give leave either to build or break up, reserving the whole for sheep, and yet not stocked; for the people assert, that they could keep twice the number, if they had them.

LIMOUSIN.—*To Limoges.*—The mountainous heaths and uncultivated lands are commons, and therefore every metayer sends his sheep in the common flock of the village.

BIGORRE.—*Bagneres de Luchon.*—The waste tracts of the Pyrennees, by which are to be understood, lands subject to common pasturage, are so much subject to the will of the communities, that these sell them at pleasure. Formerly the inhabitants appropriated to their own use, by inclosure and cultivation, what portions they pleased; but this obtains no longer; at present the communities sell these wastes, and fixing a price on them, nearly to their value, new improvements are not so common as heretofore.

LANGUEDOC.—*Narbonne to Nismes.*—This vale, which is by far the richest of Languedoc, in productions, is of no considerable breadth, yet the quantity of waste neglected land in it is very great.

Monrejeau to Lann-Maison.—Vast wastes, covered with fern; the soil good; and land projecting into it cultivated to advantage.

Bagneres de Bigorre.—These immense fern-wastes continue for many miles, with many new improvements in them. They belong to the communities of the villages, which sell portions of them to any persons willing to buy. The price most common has been 20 liv. the journal, of 128 cannes square, the canne 8 pans; the pan 8 inches and 4 lines, 4 journals making an arpent. The method of improving has been, first to burn all the fern and rubbish, then to mattock it and sow rye, which is pretty good; then oats for six, seven, or eight years, according to circumstances; after that they summer-fallow and take wheat. Some they leave to grass and weeds, after those eight crops of oats: a detail of the husbandry of barbarians! They have all a right of commonage on the wastes, as long as these continue uninclosed; consequently can keep cattle, and especially sheep, to any amount in summer; yet, in their inclosed improvements, they give not a thought to raise winter food? Such stupidity is detestable. The parish of Cavare has 104,000 arpents of these wastes, without one metayer; all are peasant proprietors, who buy morsels as it suits them. The improvements are exempted from tithes for ten years; but not at all from the King's taxes, which is shameful.

BEARN.—*Pau to Moneins.*—Vast wastes of rich soil, covered with an immense product of fern, to the amount of five or six waggon loads an acre.

St. Palais to Anspan.—Vast wastes; belonging to the communities of the parishes, that sell them to whoever will buy: a common price 120 liv. per arpent; but after they are brought into culture, they sell for at least 300 liv. The advantages

vantages of this system, which extends through the whole region of the Pyrennees, is prodigious: it excludes the rights of commonage, because all is inclosed as fast as bought; and enables every industrious man, that saves a little money, to become a land proprietor, which is the greatest encouragement to an active industry the world can produce; it has, however, one evil, that of too great a population.

Bayonne to St. Vincents.—In this line I came first to the *landes* of Bourdeaux, because they extend from the gates of Bayonne to those of Bourdeaux, and of which I had read so much, that I was curious to view and examine them; they are said to contain 1,100,000 arpents*. They are covered with pines, cork-trees (only half the value of pines), broom, whins, ling, and furz; the soil sand, but the growth of trees shews a moist bottom. There is a good deal of cultivation mixed with the waste this first stage. There is much land also under water, a sort of sandy fen. Pass a great space, without trees, covered with dwarf furz, ling, and fern. Others before Dax; one of them of five or six miles long, by two or three broad: much rough grass and ling on it; but none of these tracts appear half stocked.

Dax to Tartas.—This district is a deep white sand, the whole of which has evidently been *lande*, but part of it inclosed and improved; much is, however, yet rough.—Singular scene of a blowing sand, white as snow, yet oaks growing in it two feet diameter; but a broken ground discovers a bed of white adhesive earth, like marl, which explains the wonder.

Learn at Tartas, that these immense wastes, the *landes*, without pines or wood, are to be purchased, at all times, very cheap indeed, of the King, the great lords, and of the communities of many parishes, even so low as 3 liv. per arpent, with an exemption from tithes, and from taxes for twenty years. But every one here reckons them so bad, that all the money spent would be sure to be lost; yet it is admitted, that there is a bed of marl or clay under all the country. This opinion is chiefly founded on the attempts of Mons. Rollier, of Bourdeaux, having made a trial of cultivating them, and succeeded very ill. I guessed how such improvements had been attempted, and told my informants what I supposed had been done; and my guess proved exactly right: corn—corn—corn—corn; and then the land pronounced good for nothing. It does not signify telling such people, that the great objects, in all improvements of wastes, are cattle, and sheep, and grass, after which corn will be sure. Nothing of this kind is comprehended from one end of France to the other.

As I shall here take my leave of these *landes*, I may observe, that, so far as they are covered with pines, they are not to be esteemed wastes; but, on the contrary, occupied with a very profitable culture, that does not yield less than from 15s.

* *De la Necessité d'Occuper tous les gros Ouvriers*, p. 8.

to 25s. an acre annual revenue. Of the very extensive tracts not so employed, and which are to be purchased at so cheap a rate, they are among the most improveable districts in the kingdom, and might be made, at a very small expence, capable of supporting immense flocks of sheep.

Cavignac to Pierre Brune.—Many sandy wastes, with white marl under the whole.

To Chersac.—Great wastes, of many miles extent, covered with fern, ling, and shrubby oak; all greatly improveable.

To Montlieu.—Ditto. Many of these wastes belonged to the Prince of Soubise, who would not sell, but only let them; the consequence has been, that no improvements have been wrought.

La Graule.—The wastes in this country are sold at 10 liv. the journal, and less; some better at 30 liv. The journal here is to the English acre as ten to thirty-eight; it consists of 10 carraux, each 18 feet square.

NORMANDIE.—*Valogne to Cherbourg.*—Mons. Doumerc, of Paris, having bought of Monsieur, the King's brother, 3000 arpents, part of 14,000 sold at the same time, being parcel of an antient, but much neglected, forest, has made an improvement here, which, so far, deserves attention, as it shews the principles on which French improvers proceed. He has brought into culture 700 verges, which form his present farm, around a house for himself, and another for his bailiff, all built, as well as many other edifices, in much too expensive a manner; for these erections alone cost 2500 louis d'or. Such unnecessary expenditures in building, is generally sure to cripple the progress in much more necessary matters. The first business in the improvement, was to grub up the wood; then to pare and burn; and manure with lime, burnt with the furz, fern, and heath of the land; the stone was brought from Valogne: as soon as it was cleared, it was fallowed the first year for wheat. Such infatuation is hardly credible! A man is commencing his operations in the midst of 3000 acres of rough ground, and an immense pasturage for cattle and sheep, begins with wheat; the same follies prevail every where: we have seen just the same course pursued in England, and prescribed by writers. Such people think cattle and sheep of no importance at the beginning of these improvements. This wheat, limed at the rate, per arpent, of 7 or 8 tonneaux, of 25 boisseau, each 18 pots of 2 pints; 4 boisseau of seed sown, and the crop 40 boisseau. After this wheat sown 5 boisseau of oats, the crop 40. Then barley, seed 4 boisseau, produce 20 to 25 boisseau. With this barley clover sown; mown the first year twice, and pastured the second; being then ploughed for wheat, which is inferior to the original crops; then oats and fallow again. From all these crops it is sufficiently evident, that French farmers esteem corn, and not cattle, the proper support of a new improvement. The soil which has been thus reclaimed,

claimed, is on a stone quarry in general; a friable sandy loam, covered with a strong spontaneous growth (where not forest) of furz, fern, and, in some places, heath; mixed with much grass, and even clover and *millefolium*; which, if properly stocked by cattle, well fed in winter, would be of considerable value in its present rough state.

Though the methods pursued have not been calculated on the best principles, yet there is certainly a considerable degree of merit in the undertaking. Last year's crop of wheat produced 40,000 gerbs: and this year (1787) there is one piece of oats, of 80 verges, which gives 12,000 gerbs, at 15 boisseau per hundred; each boisseau 40 lb. and the price at present 45*s*. The present stock, 207 wethers, 10 horses, 21 working oxen, 10 cows, 1 bull, 6 young cattle, are certainly fine, for a spot where, ten years ago, Monf. Baillio, the bailiff, who has executed the whole, and who seems to be a truly excellent man, was in a hovel, with no other stock than a dog. The whole improved, would now let at 15 liv. per verge, 2½ to the arpent.

BRETAGNE.—*Combours to Hédé*.—Pass an immense waste for a league, but to the left a dead level, boundless as the sea; high lands at one part, seemingly 8 or 10 leagues off. Every part which the road passes, has been under the plough, for the ridges are as distinct as if made but last year; and many ruined banks of hedges cross it in various ways. The spontaneous growth, furz, ling, and fern; the soil good, and equal to valuable crops, in a proper management. The King has part, Monf. de Chateaubriant part, and other seigneurs also; but every body I talked with says, it is good for nothing. Would to heaven I had 1000 acres of it at Bradfield! I would soon put that assertion to the test.

Rennes.—The waste lands, which, in almost every part of the province, extend for many leagues, are almost every where to be bought, in any quantity, of the seigneurs, at 10*s*. the journal, which is to the English acre as 47 to 38, with a small quit-rent per annum.

St. Brioux.—Inquiring here into the period of the cultivation which I every where remarked on the *landes* of Bretagne, I was told, that it was no antient culture, but common for peasants, who took them of the seigneurs, to pare and burn, with the *ecoubu*; exhaust; and then leave them to nature; and this for forty, fifty, and sixty years back. Rented for ever at 20*s*. to 30*s*. the journal.

St. Nazaire to Savanal.—Immense bog marked on all the maps of Bretagne, and filling the space of many leagues, covered with vast growth of bog myrtle, and coarse grasses, three or four feet high: what a field for improvement, in a climate that gives such a spontaneous growth!

To Nantes.—In the *landes*, which, strange to say, extend to within three miles of Nantes, there was an improvement attempted some years ago: four good houses of stone and slate are built, and a few acres run to wretched grass,

which have been tilled, but all savage, and become almost as rough as the rest: a few of the banks have been planted. This may be the improvement I heard of afterwards at Nantes, made by some Englishmen, at the expence of a gentleman, and all the parties ruined. I inquired how the *improvement* had been effected: pare and burn; wheat; rye; oats!!! Thus it is for ever: the same methods, the same failures, the same folly, the same madness. When will men be wise enough to know, that good grass must be had, if corn is the object?

Nantes.—I have now travelled round the vast province of Bretagne, and may observe, that so large a proportion of it is waste, as to be difficult to calculate: I have passed tracts of land, of three, four, five, and even eight miles in extent, without any cultivation, and I have heard of much more considerable even to fourteen leagues in length. I have marked one district in the map which contains some hundred thousand acres. Three-fourths of the province are either waste, or so rough as to be nearly the same thing. This is the more surprising, as here are some of the first markets in France; that is to say, some of the most considerable commercial towns; and every where the vicinity of the sea. These enormous wastes, which are said to exceed two millions of arpents*, are found, as I have remarked, in my notes on the great road, within four miles of such a city as Nantes: vast districts are to be had on leases, or rather property for ever, on the payment of very slight fines. The soil is generally very improveable; I mean, convertible to cultivation, at a very small expence, and with great facility; contrary to the assertion of every body in the province, who have been so used to see it desolate, that they cannot readily believe it capable of a better husbandry than being burnt, exhausted, and left to nature. The means of improving these wastes are absolutely unknown in France, and not much better understood in England. The profit of the undertaking, however, when properly pursued, upon the never-failing principle of grass—sheep—cattle—corn; instead of the common blunder, which puts the cart before the horse (if I may use a vulgar proverb), will be found great and rapid.

ANJOU.—Turbilly.—In the journal-part of this work, I have explained the motives which carried me out of my road, to view the wastes of this vicinity, and particularly the improvements of the late Marquis of Turbilly, described at large in his *Memoire sur les Defrichemens*, which has been so often cited in almost every language.

The immense heaths, or *landes*, are, in general, a sandy or a gravelly loam; some on a gravel, others on a clayey, and others on a marley bottom; and others, again, on imperfect quarry ones: the spontaneous growth would predominantly be every where forest, particularly of oak, if it were inclosed, and

* *De la Necessité d'Occuper tous les gros Ouvriers*, par Mons. Boncerf. 1789. P. 8.

preserved from depredation. At present, it is wood browsed and ruined, fern, furz, broom, ling, &c. &c. In the desert state in which the whole country is left at present, the value is nothing else but what it yields to a few cattle and sheep; not the hundredth part of what might be kept, if any well regulated provision were made for their winter support. I passed ten miles over these heaths; they were, in some directions, boundless to the view; and my guide assured me, I might continue travelling upon them for many days. When at Tours, I was told of their extending much in that direction also. The climate is good. There are streams that pass through these wastes, which might be employed in irrigation, but no use whatever made of them; there are marl and clay under them, for manure; and there is every where to be found plenty of pasturage, for the immediate summer food of large flocks.—In a word, there are all the materials for making a considerable fortune—except skill and knowledge.

Such was the country in which the late Marquis of Turbilly sat down, at an early period of life, determining to improve his estate of 3000 arpents in these deserts; with all the necessary activity of disposition; every energy of mind; and that animated love of laudable attempts, to give life and efficacy to the undertaking. Some meadows and plantations, which he made, succeeded well, and remain; but, of all his improvements of the heaths, to the inconsiderable amount of about 100 arpents, hardly any other traces are now to be seen, except from the more miserable and worn-out appearance of the land; which, after cropping, was, of course, left in a much worse condition than if it had never been touched. The fences are quite destroyed; and the whole as much *lande* as before improvement. This flowed from the unfortunate error, so common, indeed so universal, among the improvers of waste lands; and unexceptionably so in France—that of improving, merely for the purpose of getting corn. Pyron, the labourer who worked in all the Marquis' improvements, informed me, that he pared and burnt, which is the common practice of all the country, and then took three crops of corn in succession; that the first was very good, the second not good, and the third good for nothing, that is, not above three times the seed: from that moment there was an end of improvement; it only crawled, during many years, to the amount of 100 acres; whereas, if he had begun on right principles, he would, in all probability, have improved the 3000; and, others copying his modes, the whole country might, by this time, have been under cultivation. It was reckoned a vast effort in him to fold 250 sheep: and this was the best engine he had in his hands; but giving the fold for corn, it was lost as soon as exerted. Instead of 250 sheep, the Marquis should have had 500 the first year, 1000 the second, 1500 the third, and 2000 the fourth; and all his paring, burning, manuring, folding, exerted to raise turnips (not their

their contemptible *raves*) to winter-feed them; with so much burning, folding, and eating off the turnips, the land would have been prepared for grass; and when once you have good grass, good corn is at your command. Thus corn was the last idea that should have entered his head: instead of which, like other French improvers, he rushed upon it at once—and from that instant all was ruined.

The particular advantages of the spot are considerable, if ever an improver should arise, with knowledge enough to pursue the methods that are adapted to the soil and situation. The hills of all the country are so gentle, that they are to be tilled with great ease; offering the advantage of perennial streams, that run at present to waste in the vales. There are rich veins of white marl, with an under-stratum, in many places, of clay. There is a hill of shell sand, for improving the stiffer soils and the moory bottoms. There is lime-stone at the distance of half a league, and plenty of peat to burn it. The Marquis of Gallway's father spread some of the shell sand on a small poor field, and had an immediate luxuriance of crop in consequence. The present curé of the parish has tried the marl, with equal success. But both these manures, and indeed any other, would be absolutely lost, if a succession of corn crops were immediately to follow. It is this valuable under-stratum of clay and marl which gives such a growth to wood. In passing from La Fleche to Turbilly, I was amazed, in some spots, at the contrast between the apparent poverty of the surface soil, and the oaks scattered about it; they are, in general, eaten up by cattle, yet the bark is clean and bright, and this year's shoots four and even five feet long. A common mode, and indeed the only one, of attempting improvements here, is to permit the peasants to pare and burn pieces of the heath; to take five crops in succession, but to leave the straw of the last; to fence the piece around; and to sow whatever seeds of wood the landlord provides, usually oak, for a copse, which, in this villainous way, succeeds well; but as such copses are fenced with a ditch and bank only, and never any hedge planted, they are presently open and eaten.

MAINE.—*Gueffelard*.—The *landes* of Anjou extend over a great part of Maine also. Here they told me, that the extent in that neighbourhood is hardly less than sixty leagues in circumference, with no great interruption of cultivation. The account they give of the soil is, that it is absolutely good for nothing but to produce wood, which it will do very well. The seigneurs fief it out for ever, in any quantity, at the rent of half a bushel of oats an arpent (the bushel 30 lb. of wheat), and some at 10*s.* to 20*s.* The peasants pare and burn, and get a very fine crop of rye; then another poor crop of rye; and after that a miserable one of oats; reckoning, in common, that a burning will give just three crops; after which the land is strictly good for nothing, but is left to nature

ture to recover itself. The price of paring and burning 30 liv. per arpent. I can hardly record these instances of barbarism with tolerable patience—without dealing execrations, not against a poor unenlightened peasantry, but against a government possessing, in demesne, immense tracks of these lands, without ever ordering any experiments to be made and published, of the best methods of improving them. But had it come into any such project, and had those experiments had French conductors, they would have been merely with a view of getting corn! corn! corn!

To Le Mans.—Much of these wastes here resemble the sands of Sologne; upon a dead level, and water standing in many places; yet the soil a sand; and, in spots, even a running one: it arises from the same circumstance which makes them productive of oak timber, wherever preserved, viz. the bottom of clay and marl.

BOURBONNOIS.—*Moulins.*—Three-fourths of the whole province waste, or heath, or broom, or wood.

St. Pourçain.—As I quitted the Bourbonnois in this vicinity, entering Auvergne, it will not be improper to remark, that the whole province, as well as that of Nevernois, ought, respecting all the purposes of improvement, to be deemed waste. The culture that is carried on, without any exception, on the arable lands, is only fallowing for rye; and, after two or three rounds, the land is so exhausted by this blessed system, that it is left to weeds: broom is the prevalent spontaneous growth in such a case; and if the broom be left for a number of years, it becomes a forest. This rye-course produces the landlord, for his half (as all is in the hands of metayers), about 2s. 6d. or 3s. an acre through the whole farm, by corn, cattle, &c.; and at such rates a vast proportion of the province is cheaply to be bought. Considering that the lands are all inclosed; that wood enough is every where found; that the country is furnished with a sufficient quantity of buildings; that the roads are excellent; that it enjoys a navigation to the capital; that markets are good, and prices high; that there is marl or clay under the sands and sandy gravels; that the climate is one of the finest in Europe; and the country highly pleasant and beautiful: when all these circumstances are well weighed, it will be admitted, that no part of France is so eligible to establish a great and profitable improvement; but, as I must again repeat it, the whole province appears waste to the eyes of an English farmer.

AUVERGNE.—*Brioude.*—The mountains in this neighbourhood too much cultivated; the earth is, by such means, washed away by storms, and torrents drive away every thing.

VIVARAIS.—*Pradelles.*—Pare and burn old turf in these mountains. Great tracts burnt, exhausted, and left to nature to recruit.

To Thuytz.—Cultivation is carried on in these mountains to an incredible height; and is all by hand. In some cases, earth is carried, by hand, in baskets, to form the terraced beds, that yield a difficult and scanty crop, that is brought away on the back. Nothing could possibly support such exertions, but the whole being small properties; every peasant cultivates his own land.

PROVENCE.—*Tour d'Aigues.*—The mountains here are all calcareous, yet they are, from a vicious culture and management, destroyed and abandoned, and yield subsistence to a few miserable goats and sheep only; such mountains in the Vivarais, the President remarks, are covered with superb chesnuts, that yield a good revenue;—this country would do equally well for them, as appears from the very fine ones found in the park of Tour d'Aigues. The cutting of every bush for burning the earth is the cause: this species of culture loosens the surface, and renders it a prey to torrents; so that all is washed into the rivers, and becomes the destruction of the plains. The Durance, in its whole course, of near 200 miles, has destroyed, on an average, to the breadth of half a league.

General Observations.

In the preceding notes, mention is often made of great tracts of country, so miserably cultivated, that the whole would, by a good English farmer, be considered as *waste*. This is particularly the case in Bretagne, Maine, Anjou, Sologne, Bourbonnois, &c.; and it is this circumstance which reduces the general average product of France to so low a pitch, as appears in the chapter which treats of it, notwithstanding the immense tract of twenty-eight millions of rich land, the products of which are, of course, very high. Here then ought to be the great effort of a new system of government in France. The revolution has cost immense sums; and has occasioned a happy defalcation of the revenue, provided it be replaced, wisely and equally, on some object of general consumption, *and not on land*; but the public burthens of the kingdom are so heavy (proportioned to its consumption and circulation), that every attention should be exerted to increase and improve the contributing income; and this can in no way, and by no methods, be effected so well and so easily, as by spreading improvements over these immense wastes, which are such a disgrace to the old government. The wastes alone are calculated, in these sheets, at 18,000,000 of English acres; if to these we add the tracts, in the above-mentioned provinces, which, though cultivated, are no more productive than wastes, and much of them not of equal profit, we cannot reckon for the whole less than 40,000,000 of acres that are in a waste state; not absolutely unproductive, but which would admit of being rendered four, five, six, and even ten times more so than they are at present. This extent is nearly equal to that
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of the kingdom of England; whence we may judge of the immense resources to be found in the improvement of the agriculture of France; and the wisdom of the measures of the National Assembly ought to be estimated in proportion to their exertions in this respect, rather than in any other. If they give a ready, immediate, and absolute right of inclosure; an exemption from all taxation whatever, for twenty-one years; and, by a wise system of imposts, the future prospect of not being too much burthened; if such be their encouragements, in addition to the great ones already effected, particularly in the abolition of tithes, they may expect to see, in a few years, great undertakings on these desolate tracts. But the policy of a good government will not, in this point, do the whole; it may encourage buildings, inclosures, manuring, and the investment of large capitals; but if these soils be attempted to be cultivated, as they have hitherto always been in France, failure, bankruptcy, and ruin, will be the consequence; and the lands, after a few years, left in a worse state than they are in at present. The government should therefore not omit taking the necessary steps, to have instructions well diffused for the cultivation of these immense tracts of country; not in the spirit of the old * system, by printing memoirs, which, if followed, probably would spread more mischief than benefit, but by the exhibition of a farm in each considerable district, under a right management, and in that degree of perfection of culture which is applicable to the practice of all mankind; of the poor farmers as well as of rich ones: every other species of perfection does well enough for gentlemen to commend, but is not adapted for farmers to imitate. One large farm, taken entirely from waste, in Bretagne, another in Anjou, a third in Sologne, a fourth in Bourbonnois, and a fifth in Guienne, would be sufficient. If these farms were cultivated on right

* The edict exempting new improvements from taxation, was in the right spirit. We are informed, by Monf. Necker, that from 1766 to 1784, no less than 950,000 arpents were declared *défrichés*. *De L'Administ. des Fin.* 8vo. T. iii. p. 233. There can be no doubt but the greater part of these are long since abandoned again to nature. I never met with a single person in France who had half an idea of improving waste lands; and I may add, that, of all other practices in the agriculture of England, this is the least understood. See my *Observations on the present State of the Waste Lands*. 8vo. In regard to the excellent edict above-mentioned, there occurs a proof of the gross and consummate ignorance which one meets so often in France on all agricultural subjects. In the *Cahier du Tiers Etat de Troyes*, p. 38, they demand the abrogation of this edict, as prejudicial to the nourishment and multiplication of cattle. Even the nobility of *Cambray*, *Cahier*, p. 19, are against cultivating commons. The nobility of *Pont-à-Mousson*, *Cahier*, p. 38, declare, that the encouragement of inclosures and *défrichemens* is prejudicial to agriculture; shame on their folly! The clergy are wiser, for they demand that the possessors of wastes shall either cultivate them themselves, or let others that are willing, on reasonable terms. *Cahier de Melun & Moret*, p. 22; and that all commons shall be alienable for the prosperity of agriculture. *Bayonne*, art. 51. And some of the *Tiers Etat* also; all commons to be divided. *Cotentin MS.* And new *défrichemens* to be exempted from all taxes for twenty years. *Nîmes*, p. 19. *La Rochelle*, Art. 17, *MS.*

practical principles, on those of utterly disregarding corn till the ample support of sheep and cattle (but particularly the former) in winter, by means of green crops, and in summer by grasses, gave such a command and facility of action, that whatever corn was then sown, would, in its produce, be worthy of the soil and climate of France, yielding ten for one on these wastes, instead of five or six for one, the present average of cultivated lands in that kingdom. If this were done, I say, the profit of *such* improvements would be equally great and durable; the practice exhibited would take deep root in the respective provinces; and extensive and speedy improvements would be the consequence. By such a policy, the National Assembly would prove themselves genuine patriots; the kingdom would flourish; population, which, at present, is a burthen, would be rendered useful, because happy; and the consumption and circulation of these provinces increasing, would give a spur to those of the whole society; the weight of taxes would lessen, as the basis enlarged that supported it:—in a word, every good effect would flow from such undertakings, if properly executed, that can add to the mass of national prosperity; and consequently the most worthy of the attention of an enlightened legislature*.

Attempts have been made to improve these wastes, but always with ill success; I saw a neglected farm gone back nearly to its pristine state, not far from Nantes; the Marquis of Turbilly's, in Anjou, had no better success; and equal failures attended those that were tried on the heaths of Bourdeaux; and I heard of some others, similar undertakings, in different parts of the kingdom; but, in general, they were all equally unsuccessful; and no wonder, for all were conducted on the same plan, with no other object in view than corn; but this is the least important of the products, as it hath been above observed, that should be found on new improvements. A French writer†, who speaks from experience, as well as the Marquis of Turbilly, prescribes this course;—1, dig, at the expence of 20 liv. per arpent, of 46,000 feet, in winter, and summer-fallow, with many ploughings and harrowings, for—2, wheat;—3, oats;—4, fallow;—5,

* At present (August 1793) we know what the blood-hound government of France have done for agriculture: COMPLETELY ruined all that was good in it.

† *Experiences and Observations sur les Défrichemens.* Par Monf. le Doffeur. Lamballe. 1775. 4to. P. 26, 28, 33. This gentleman tells us, that paring and burning should be practised only on a calcareous soil, for in Bretagne the peasants get but two or three crops of corn by it; and if more, much dung is requisite. But if they can have two crops of corn, cannot they have one crop of turnips? Cannot they have GRASS, which seems never to be in his contemplation, though almost the only thing that ought to be in view. De Serres knew better; he recommends paring and burning, describes the operation, and answers the objection of those who urged a short continuance of the profit, by shewing, that such cases proceed from improper management, and do not occur, if the laws of good tillage be pursued, *au cultiver & au reposer.* *Le Théâtre D'Agriculture, par D'Olivier de Serres.* 4to. 1629. P. 64 to 70.

wheat;—6, oats, &c. &c. This gentleman, who tells us he broke up and improved 450 arpents, has not explained how *real* improvement is to be made without sheep or cattle. Where is his winter food in this preposterous course? If these 450 arpents be really improved, they have cost him five times more than they are worth; but I suspect they are—improved *a la Turbilly*. It is mere romance to think of improving wastes profitably without a great flock of sheep. The ideas of French improvers seem rooted in a contrary spirit; to the present moment, there is no other plan than the old one of corn. A publication of the year 1791, *Memoire sur l'Utilité du Défrichement des Terres de Castelnau-de-Medoc*, speaks of the same methods—*déraciner—labourer—herfer—ensemencer—froment—seigle*, p. 5. The same views in every part of the kingdom; but when you inquire for cattle, you have, on some hundreds of acres, seven cows, three mares, four oxen, and no sheep! (P. 4.)

As the subject is one of the most essential in French agriculture, I will very briefly sketch the right principles on which alone waste countries can be improved to profit. The rapid view which is practicable for a traveller to take, will allow no more than an outline; fully to explain the process would demand a distinct treatise.—1, The buildings, upon which so much money is generally so uselessly employed, should, in a private undertaking, be adapted to that sized farm which lets in the country most advantageously; but, in a public undertaking, they should be adapted to that sized farm which is most favourable to a beneficial cultivation of the soil; in the latter case from 400 to 600 acres. This attention to the scale of the buildings flows from the plan of the improvement, which is that of letting the land in farms, as fast as it is well improved and brought into the cultivation in which it ought afterwards to remain. But whatever the size of the future farms may be, the strictest attention ought to be had to keeping this part of the expenditure as low as possible; it contributes little to the productiveness of the land, except what arises from convenient offices for cattle and sheep.—2, The next object is to buy a large flock of sheep, to feed on the lands, in their waste state, that are to be improved; five hundred would be a proper number to begin with. These sheep should be, as nearly as possible, such as the South Downs of England; of the French breeds, the most profitable, and the best to procure, would be those of Rouffillon. It is of more consequence to have a breed not too large, and well clothed with a short firm fleece, than larger or more expensive breeds.—3, The first summer should be entirely employed in paring and burning, and cultivating, at least, 100 acres of turnips and rape, for the winter support of the sheep and plough-oxen. After the turnip-season is past, the paring and burning to continue for rye, artificial grasses to be sown with the rye.—4, Begin, as early in the spring as possible, to pare and burn fresh waste, first for a crop of potatoes, on fifteen

or twenty acres, and then for 200 acres of turnips. The turnip land of last year to be sown with oats, on three ploughings; and with the oats, over fifty acres, clover-feed to be sown. After the turnip season is past, continue paring and burning for rye, as before. The labourers employed in the summer on paring and burning, to work in the winter on ditching, for forming inclosures; the banks to be planted with white thorn, and willows for making hurdles.— This is sufficient to state the leading principles of the undertaking. Oeconomy in the execution demands, that the labourers employed should have work constantly; in summer paring and burning, and managing the hay and corn harvest; and in winter ditching; quarrying, if there be lime-stone on the premises, for burning lime for manure; and, if not, digging and filling marl, or chalk, or other manures which may be found under the surface. In like manner the number of masons and carpenters should be so regulated, in proportion to the works, so as to find constant employment through the building season.

The courses of crops will explain the whole business of tillage. On the land pared and burnt, and planted with potatoes in the spring, the following rotation:—1, potatoes;—2, oats;—3, turnips;—4, oats, and grass seeds for laying down.

On the land pared and burnt, and sown with turnips at midsummer:—1, turnips;—2, oats;—3, turnips; 4, oats, or barley, and grass seeds for laying down.

On the land pared and burnt, and sown with rye in autumn:—1, rye;—2, turnips;—3, oats;—4, turnips;—5, oats, and grass seeds for laying down.

All the turnips to be fed on the land with sheep, by hurdling, except the small quantity that would be wanted for the plough oxen.

All the grasses to be mown the first year for hay, and then pastured by sheep, for two, three, four, or more years, according to circumstances. When they wear out, or betray indications of a want of renewal, they may be broken up with a certainty of yielding grain in plenty; but no two crops of white corn ever to be sown in succession: by white corn is understood wheat, rye, barley, and oats.

A very easy, and, in some cases, effectual method of improving heaths, is by grubbing up the plants that grow spontaneously, and spreading lime upon the waste without any tillage, sowing grass seeds and covering them by the sheep-fold: it is surprising what a change is thus effected at the smallest possible expence; soils, apparently miserable, have been made at once worth the rent of 20s. per acre.

It is not possible to give more than an outline in such a sketch as this; variations, arising from a difference of soil, will occur; which, though not considerable, must be marked with care, or useless expences will often be incurred. The method just hinted at is particularly applicable upon those wastes, which
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are, in culture, steril, from abounding with the vitriolic acid; the case of many in Bretagne; where pudding stone is found in some districts at six to eight inches under the surface: cultivation on such, by the plough, may be so tedious and expensive, that the mere paring and burning, and application of a calcareous manure, lime or marl, with grass seeds, and fold, as above-mentioned, would be much the best improvement, as I have myself experienced, in a country more vitriolic and steril than any wastes I saw in Bretagne.

The progress of the flock of sheep will, by its procreation, shew what may be the given progress of such an improvement, providing turnips, in the proportion of one acre to five sheep, which will allow enough for oxen and other cattle, and supposing the losses upon a flock to be 5 per cent.

If the breed of sheep be good, all the ewes should be saved, for increasing stock, and the wethers should be kept until two years old and past, sold fat at from two to three years. On such a plan, a flock increases rapidly, perhaps more so than the capital employed. But the conductor of such an undertaking would of course proportion his flock to his money, so that all the works might be constantly going on, without stop or break; to effect which, would demand no inconsiderable foresight and knowledge of the business.

By the plan of letting the lands, as soon as brought into complete cultivation, the capital employed in the undertaking would be exerted to the utmost force and advantage, in spreading the improvement over the greatest possible breadth of waste. If the lands were all to be kept accumulating into one farm, it would grow too vast to be managed with profit; but, by letting, the principal attention, exertion, and force of capital would be always employed where most wanted and most useful; and it is hardly to be believed, by those not accustomed to such observations and inquiries, how great a tract of country might, in twenty years, be improved.

Planting colonies of foreigners upon wastes, has been a favourite method pursued in several countries, particularly in Spain and in Russia; such speculations have rarely answered the immense expences bestowed upon them. The lands are usually but half improved; the husbandry introduced is almost sure to be bad; and the jealousy, with which the new settlers are viewed by the natives, prevents their practice from ever being imitated. Such a mode of improvement, as is here sketched, would be infinitely more beneficial; what was done would be well done; all would be executed by natives; for the only foreigner employed in the business should be the director. There would be no probability of the improvement not being durable and spreading widely; for the lands not being let until the cultivation was completely in train, the profit as well as the method would be seen by every one.

By

By executing the improvement of a waste on these principles, ten thousand pounds would have an infinitely greater effect than an hundred thousand expended in any other method: in the German colonies, established in the Siera Morena in Spain, and in various others in different parts of Europe, much attention has been paid to the establishing of little farms only. I do not want to view such, to know that the improvement is beggarly, and the husbandry contemptible: no waste can be really improved, and to the best advantage, but by means of the sheep, powerfully applied; all other methods are costly, slow, and of weak effect; but no little farmer can have a flock sufficient. This paltry idea of establishing nothing but little farms, is the result of most impolitical ideas respecting population, which ought never to be the object of a moment's attention. If it exist idle, or beyond the proportion of employment, it is the source of poverty and wretchedness; it is valuable only in proportion to regular and active employment; find that employment and you will have an industrious active population in spite of every obstacle. But small farms and little divisible properties, increasing the people, without increasing employment, has no other tendency than to propagate idle beggars, and to disseminate modes of husbandry, calculated to exhaust the land and keep its cultivators in misery. This is not theory but fact, of which almost every province, in France, abounds with glaring instances. But of this more in another chapter.

There is another sort of waste land, that abounds also very much in France, I mean marshes: it is asserted, that there are from 1,200,000 to 1,500,000 * arpents of them in France. The improvement of these is vastly more expensive and more difficult than that of *landes*, heaths, moors, &c. The drains demanded for them require a considerable capital. These ought to be converted to meadow and rich pasture, by means of draining. Where they admit it, the cheapest improvement of such is by irrigation: the general drainage of great marshes, if not trusted by the assemblies of the departments to the conduct of some one able director, should be done by commission; by constituting a company, as in England, and paying the expence by a tax on the lands drained. If the rage for small farms continue, these marshes, in proportion as the soil is boggy, will admit of being divided into small portions, that is, of 30 to 60 arpents, but it should be under an absolute prohibition of the plough. The bog, which I saw in passing from Auvergnac to Nantes, and which seems, from its appearance on the map of Bretagne, to be of a vast extent, is highly susceptible of improvement, and every acre of it might be converted into rich meadow.

* *Rapport du Comité d'Agriculture, &c.* 7 Fev. 1790, par M. de Lamerville, député de Berri. P. 3.
De la nécessité d'occuper tous les gros Ouvriers, 1789, par M. Boncerf. P. 3.

C H A P. XV.

Of Coals, in France.

LIMOUSIN.—*Limoges*.—I WAS here assured, that a vein of coal has been found at the depth only of 12 yards, which is 17 feet thick, but it is no where used, either in houses or in manufactures; the iron forges are all worked with charcoal. If this is fact, what a want of capital it proves!

FLANDERS.—*Valenciennes*.—There are mines worked here. The manco of 240 lb. sells for 23*s*. 9 den. and the worst of all at 12½*s*.; the largest of all at 35*s*. and 36*s*.; they are more abundant at Mons. Wood is burnt here at the inns, and at all the better private houses, but the poor burn coal: the mines, they say, are 700 feet deep; the coal is drawn up by four horses; they have four steam engines.

Lille.—Coals, the raziere, 3 liv.

Dunkirk.—English, the raziere of 300 lb. 8 liv. These are burnt in every house in the town, and are one-third cheaper than wood: there is a canal to the coal pits at Valenciennes, but the distance too great, and locks too numerous and expensive to rival the import from England.

Bethune.—Pits within a few leagues. Price here 44*s*. to 46*s*. the raziere, which, I have been told, holds about nine English pecks; but the raziere of St. Omers holds 195 lb. of wheat.

Rouen.—The boisseau of 22 pots, each 2 bottles, 3 liv. 10*s*.

Isigny.—A mine newly opened, at which the coals sell at 14*s*. 1 liard, the boisseau, of 90 lb. to 100 lb.

Carentan.—Coals of the country only for blacksmiths, 14*s*. the boisseau of 80 lb. dry at the mine, but wet are 90 lb. or 100 lb.: they are not half so good as what is brought from England.

Cherbourg.—In the manufacture of blown plate glass, a great quantity of Newcastle coal is burnt; 13 keel, or 103 chaldrons, cost, all English charges included, about 7500 liv.; the French duty 3600 liv.; and port charges, &c. make it in all about 11,000 liv. which, being near 5*l*. a chaldron, seems an enormous price, at which to buy fuel for a manufacture. The coals of the Cotentin, they say here, are good for nothing.

Granville.—The blacksmiths burn *Guernsey* coals.

Auray.—English coals 3 liv. the boisseau of about three English pecks, which the blacksmiths use for particular purposes.

Nantes.

Nantes.—French coal 300 liv. the 21 barriques, each double wine measure, or 480 pints, but one barrique of English is worth two of it.

A coal mine worked by a *Monf. Jarry*, at *Langien*, five leagues from *Nantes*. Another at *Montrelais*, near *Ingrande*; and at *St. George*, near *Saumur*. The French coals used in the foundry, near this city, come to 34 liv. the 2000 lb.

La Fleche.—Price 16*s.* the *boisseau*, of 30 lb. wheat; they are from *Angers*.

Rouen.—*Monf. Scannegatty* works the common borer, with a windlass, in boring deep for coals, for which purpose he has been employed by government: he shewed me the model of one made at *Paris*, 300 feet long; with this he has bored 160 feet, much of it in hard rock without accident: his objection to shafts, is the water rising; he would use shafts until he comes to water, but after that must bore. He says, the badness of the coal, in the mine near *Cherbourg*, arises merely from being ill worked, they have got at present only to the surface coal, instead of piercing through the bed. *M. Scannegatty* asserts, the consumption of English coals, in the generality of *Rouen*, to be two millions a year. The price is 40 liv. for 6½ barriques, each barrique 150 lb. or 975 lb. or about 80 liv. a ton.

Elbæuf.—Consumes 200,000 liv. a year in English coals.

Nangis.—Brought from *Berri*. Price 4 liv. the English bushel.

LORRAINE.—*Pont-à-Mousson.*—From *Sarbruck* 18 liv. the 1000 lb. At the mine 5 liv.

ALSACE.—*Befort.*—Price at the mine, four leagues from this place, 12*s.* the 100 lb.; here 16*s.* They are used only by blacksmiths.

BOURGOGNE.—*Chagny.*—Coals from *Mont Cenis*; at the mine 6 liv. the the wine *queu*; here 10 liv. Nobody burns coals in their houses.

Mont Cenis.—At the mine a *ban* 10*s.* It is remarkable, that at the inn here, and at every house, except those of the common workman, wood is burnt; which shews the absurd prejudices of the French, in favour of that fuel, in spite of price.

BOURBONNOIS.—*Moulins.*—Price 30*s.* the *bachole*, of which 4 make a *poinçon*.

AUVERGNE.—*Clermont.*—Price 10 liv. the *raze* of 2 feet 2 inches, by 1 foot 6 inches, and 9 inches deep. Used only in stoves, or by blacksmiths: they are from *Brioude*.

Brioude.—The *raze*, of 150 lb. 16*s.*; but the best is 20*s.*

Fix.—The *carton*, of 50 lb. 14*s.*

VIVARAIS.—*Costeros.*—The quintal 50*s.*

Thuytz.—The blacksmiths here burn charcoal, yet are near the coal mine, which I passed in the vale; it is a stone coal; the price 7*s.* the 100 lb.

DAUPHINE.

DAUPHINE.—*Montélimart*.—Large coal 1 liv. 15*s*. the 155 lb.; small, for blacksmiths and manufacturers, 22*s*. the 155 lb. The mine is at Givors, near Vienne, at five leagues from Lyon; there is a canal to Vienne, but with a toll. Coak, made of coal, for melting, 5*s*. the quintal.

Pierre-Latte.—Coals 3 liv. the measure of about 6 pecks; none used but by blacksmiths.

PROVENCE.—*Tour d'Aigues*.—Price 40*s*. the quintal. 16*s*. or 18*s*. at Aix. At the mine, three leagues from Aix, 5*s*.

Marseille.—Coals from Givors, in Dauphiné, near Lyon, 33*s*. for 210 lb. of Faveau, in Provence, 40*s*. to 42*s*. for 300 lb. Of Valdonne, 41*s*. ditto: used in the soap fabric and sugar refineries. Of England, 42*s*. to 45*s*. on board the ship, for 210 lb.; on shore 60*s*. for 195 lb.

LYONNOIS.—*Lyon*.—Coals 30*s*. the 130 lb. The mines are six leagues off; price there 24*s*. for 160 lb.; there is a canal from the pits to the Rhone.

The want of vigour in working the coal-mines in France, is to be attributed to two causes; 1, the price of wood has not risen sufficiently to force this branch of industry; and, 2, the want of capital, which affects every thing in that kingdom, prevents exertions being made with the necessary animation. But these evils will correct themselves; the gradual rise in the price of wood, which, so far from being an evil, as it is universally thought in France, is only a proof of national improvement, will by degrees force the consumption of coals; and when these are in the necessary demand, they will be produced in greater quantities.

C H A P. XVI.

Woods, Forests, Timber, and Planting, in France.

Pyrennées.—A Considerable proportion of these mountains is under wood, and a much larger has been; for the destruction of them making every day, is not credible to those who have not viewed them. Passed frequently through several woods near Bagnere de Luchon, in which the wood-men were at work, riving and cutting beech staves for casks; I was shocked to see the destruction they made, which could not have been more wasteful or lavish if they had been in the midst of an American forest. Large and beautiful beeches are cut off, 3, 4, and 5 feet high, and those noble stumps left to rot; whole trees, which, on trial, would not rive well, left for years, and now rotting untouched; and in working those we saw, nothing but clean cuts taken, 3 or 4 feet perhaps in 50, and the rest left on the ground in the same confusion in which it fell. The destruction so general in this noble forest of Lartigues, that it is almost destroyed; there is no young growth for succession; and in ten or twelve years it will be a bare mountain, with a few miserable shrubs browsed by goats and other cattle. In some tracts which I passed, at a few leagues distance, towards the walks of the Spanish flocks, there are some forests destroyed in such a shameful manner, that to a person, from a country where wood is of any value, must appear incredible; several scores of acres so utterly destroyed that not a tree remains standing; yet the whole a forest of stumps, 3, 4, and 6 feet high, melancholy and shocking to behold. The torrents every where roll down as much wood as stone, and present a spectacle of similar ruin; the roads are formed of fragments of trees, and are guarded against the precipices by whole ones laid and left to rot; you nowhere pass many yards without thrusting your cane into bodies, rotten, or rotting; all is ruin, waste, and desolation; and the very appearance one would suppose a wood to carry, in which a foreign enemy had, with the most wanton malice, destroyed every thing.

These woods are commons belonging to the communities of the parishes, upon which every inhabitant assumes the right, and practises, the rage of depredation. So careless of the interests of posterity, or rather so inflamed against every idea but that of the present moment, that in the general opinion there will be an undoubted scarcity in thirty years, amidst what have been, and yet are, in some districts, very noble forests. The communities sometimes sell woods; an instance occurred lately, that of Bagnere de Luchon sold a *fall* for 14,000 liv. but worth, it is said, 35,000 liv. in which some pilfering might take place; this

was

was to pay their share of the new bathing house. Is it possible that such a recital can be given of a country that imports pot-ash from the distance of 2000 miles!

The number of saw-mills, in these mountains, turned by torrents, is considerable; they are of a very cheap and simple construction, but exceedingly incomplete, having no mechanical contrivance for bringing the tree to the saw, a man constantly doing it by pressing with his foot on the cogged wheel.

LANGUEDOC.—*Lunel*.—At the Palais Royal inn there is one, among many stables, which is covered by twelve large beams, 16 or 18 inches square, and 45 feet long. The whole country is at present *quasi* such trees as these, denuded.

GASCOGNE.—*St. Palais to Anspan*.—An oak here sells for 30 liv. which would, in England, sell for 45s. to 50s.

ISLE OF FRANCE.—*Lieur saint*.—In the royal forest of Senars, the oak copses are cut every twenty years, and sell at 600 liv. the arpent (the cord of wood selling, at Paris, at 50 liv.), which makes 30 liv. a year, but from this carriage is to be deducted, and there will remain about a louis d'or.

Liancourt.—Woods here form a considerable portion of the whole country. They are in general cut at twelve years growth, but in some parts at fifteen and twenty; they sell at twelve years from 100 liv. to 200 liv. the arpent (about 1½ acre): at 150 liv. it may be called 12 liv. per annum: as they are on the poorest land this is much more considerable than the same land would let for, but it is much inferior to what the *product* of the same lands would be, under a tolerable system of cultivation. The quantity of forest spread over the country, in almost every direction, makes timber cheap: oak, ash, and elm sell at 30s. the cubical foot, a larger foot than that of England. The poorest family 60 liv. a year in wood.

Clermont.—Near this place, in the forest of la Neuville eu Haye, belonging to the King, there is an undertaking now (1787) going forward, which does honour to government: it is a plantation of oak for timber. The land is inclosed with pales, wired to the rails, in the French manner, instead of nailing: the land is all trenched 2 feet deep, for which the workmen are paid according to the soil, 20s. to 40s. the square perch of 22 feet, and they earn about 22s. a day: as it was an old forest where they work, there are many roots, for extracting which they are allowed something more. The soil in general is a good light loam, except in some parts, on a pure white sand. The whole expence, by contract (fencing excepted), digging, planting, filling vacancies, and hoeing twice a year, for five years, is 300 liv. the arpent, of about 1½ acre. The fence is 3 liv. the toise, or about 1s. 2d. a yard, running measure: 60 arpents are done, and they are still at work. I viewed the oaks with pleasure; they are

most of them remarkably fine; they thrive well, and are very healthy; some are five years old from the seed, and others five years old from transplanting; the plants then three years old: these are the largest, but not more so than three years difference in age ought to make them: they are in rows at about 4 feet. There is also a small inclosure of chesnuts and Bourdeaux pines (*pinus maritimus*), sown four years past, which are now 5 feet high, which is a vast growth. The only enemy which the oaks have hitherto met with, is the cock-chaffer grub, which has killed some.

Dugny.—Monf. Cretté de Paluel has planted many thousands of the poplar, with success, and has cut them, when only twelve years old, large enough for building. Several of his farming offices, very well and substantially built, are of this wood, erected twelve years ago; and the timbers are now as sound as at the time of using; but he has found, that when exposed to the weather, it does not last.

NORMANDIE.—Bon.—The seat of the Marquis de Turgot, elder brother of the celebrated controleur-general. A large plantation of foreign trees, in which nothing is so remarkable as the superiority of the larch to every other plant.

Falaise.—Woods, at twelve years growth, pay 8 to 10 louis an acre, or 22 liv. a year.

Harcourt.—The larch and Weymouth pine, of eighteen years growth, have thriven beyond any thing. I measured a larch, of that age, 3 feet 6 inches in circumference, at 5 feet from the ground; and a Weymouth 2 inches larger. Woods throughout Normandie, on an average, pay 20 liv. the Norman acre (10s. 6d. per English acre).

La Roche-Guyon.—There is nothing in this country that pays better than plantations of willows for yielding vine props. The Dutcheſs D'Enville has a piece of $3\frac{1}{2}$ arpents, which yields 400 liv. a year, by being cut every third year. New ones are set as the old wear out; the heads are cropped at three years old, and the great product is from nine to eighteen years of age. Lombardy poplars, planted by the present Dutcheſs, of twenty-four years growth, are worth 11 liv. each, standing only 6 feet asunder: it would be useless to apply calculation to this fact, to see what the acreable produce would be; for if a man had a few acres to sell every year, he would be able to get no more than the price of a very bad fire-wood, not saleable till after every better sort in a country was consumed. Could a demand be found, the profit would be enormous. They grow on the level of the Seine. They are cut into boards 10 inches wide, which sell at 2s. the foot.

ISLE OF FRANCE.—Columiers.—Woods, at nine years growth, worth 180 liv. the arpent (9l. the English acre).

CHAMPAGNE.

CHAMPAGNE.—*Mareuil*.—At twenty years growth, worth 300 liv. the arpent (101. 10s. per English acre), at 1½ or 2 leagues from the Marne, but if further, 4 liv. per arpent per annum deduction.

Epernay.—It is possible to go from hence to Alsace, with no great interruption, through forest, all the way.

LORRAINE.—*Braban*.—Woods are cut, at twenty years growth, and the produce 12 liv. per arpent per annum (18s. 4d. per English acre).

Metz.—Woods cut, at twenty to twenty-five years growth, 120 liv. the journal.

Luneville.—Woods cut, at twenty-five or thirty years growth, from 40 liv. to 100 liv. net the journal, of 1974 English yards.

FRANCHE COMTE.—*Besançon*.—Cut, at twenty-five years growth, and yields 150 liv. to 200 liv. the cutting, or 8 liv. per annum per arpent; near the forges or the city, to 300 liv. (101. 10s. per English acre).

Orchamps.—A little auberge consumes from twenty to thirty waggon loads, each 8 liv. in a year, at one fire.

BOURGOGNE.—*Auxonne*.—Pass a wood felled and corded, 12 cords per English acre; the cord 8 feet by 4 feet, and 2 high; and the price 8 liv. A little aubergiste consumes to the amount of 200 liv. a year, one fire. It would cost a poor family 80 liv. a year, if they bought fairly all they burn. Calculate

Four millions of families, at one cord, and at ten per acre, 400,000 acres.

Cut, at twenty years,	-	-	-	-	8,000,000
At two cords,	-	-	-	-	16,000,000
At three ditto,	-	-	-	-	24,000,000

Dijon.—Consumption of one fire, 5 or 6 *mæul* for the poor, the *mæul* 4 feet cubical. Of the whole town, of 24,000 people, 40,000 *mæul*. Best oak timber, 3 liv. the cubical foot. Inferior to 20s. Elm dearer than oak; used for wheel carriages only. Pine one-third cheaper.

BOURBONNOIS.—*Moulins*.—Copses cut, at fifteen years growth, and sell at 50 liv. the arpent, of 48,384 feet; no expence except cutting. Oak timber, 18s. to 20s. the cubical foot. Planks of 9, 10, and 11 inches wide, 45 liv. to 60 liv. the hundred toise (6 feet), ¾ inch thick. Laths 14s. the faggot, of 52, and 5 feet long.

AUVERGNE.—*Riom*.—One fire, and a very poor one, 80 liv. if bought.

Clermont.—A poor family, to steal none, must have ten cord, or 60 liv. and charcoal to the amount of 15 liv.; but, in general, they steal, or collect as well as they can.

VIVARAIS.—*Pradelles to Thuytz*.—Great woods of pines in these mountains, with saw-mills for cutting them.

DAUPHINE.—*Loriol*.—Oak 12s. the 100 lb.

PROVENCE.

PROVENCE.—*Tour d'Aigues*.—Wood thrives greatly in this country. The President has a great many oaks, and some of a vast size; also black poplar and beach. One by the farm-house, 13 feet 11 inches, French, in circumference, at 5 feet from the ground, and 80 feet high. Here also are evergreen oaks, 500 years old. He has *platanus* of a vast growth, in twenty-five years, and the *morus papyrifera*, of a great size. The poorest family in this country consumes 60 quintals of wood a year, stolen, or bought; generally the former. A bourgeoisie, that has soup every day at one fire, 150 quintals.

Fréjus to Estrelles.—The pines, &c. in these mountains, hacked, plundered, and destroyed, almost as wantonly as in the Pyrennees: and spots every where burnt by the shepherds, though prohibited, in order to produce herbage for their flocks.

Price of Wood and Charcoal, &c.

Price per
Paris load
of 140 ft.
liv.

1787.—LIMOUSIN.—*Limoges*.—Charcoal 30*s*. the quintal.

ANGOUMOIS.—*Verteuil*.—Cord of wood 10 liv. near a navigation; 3 liv. at a distance.

ISLE OF FRANCE.—*Montgeron*.—Cord 44 liv.

FLANDERS.—*Lille*.—Ditto 60 liv.

Dunkirk.—Ditto 60 liv. the load, of 100 measures.

1788.—NORMANDY.—*Caen*.—Charcoal 20*s*. the raziere, of 40 lb. of wheat.

Cord of beech wood, 6 feet long, 4 broad, and 4 high, 24 liv. - 35

Other woods 18 liv. to 20 liv. - - - - 27

Faggots, of 3½ feet around, and 5 feet long, with large wood in them, 60 liv. to 80 liv. per hundred,

BRETAGNE.—*Rennes*.—Cord 8 feet long, 4 high, and 2½ broad, 15 liv. to 17 liv. - - - - 28

Landernau.—Cord 8 feet by 4 feet, and 2½ high, 24 liv. - 42

L'Orient.—Cord 8 feet by 4 feet, and 2½ high, 20 liv. - 35

Auray.—Charcoal 3 liv. the barrique. Iron 5*s*. the lb. A horse-shoe 12*s*.

Auvergnac.—Cord of wood, 28 liv. - - - - 49

Nantes.—Ditto 30 liv. to 36 liv. - - - - 57

Swedish iron 280 liv. the thousand pound. Hemp 50 liv. the hundred ditto.

Ancenis.—Cord 24 liv. - - - - 42

ANJOU.—*Angers*.—Cord 8 feet long, 4 feet high, and 4 broad: a double cord, 40 liv. - - - - 42

Faggots 18 liv. to 24 liv. the hundred

La Fleche.—Cord 16 liv. to 21 liv. - - - - 39

Charcoal 70 liv. to 80 liv. the 42 barriques.

MAINE.

W O O D S.

III

Price per
Paris load
of 140 ft.

MAINE.—*Guescelard*.—The cord, 6 feet by 3½ feet, and 3½ high, of pine, 6 liv. 12
Ditto of oak, 14 liv. 26

NORMANDY.—*Gacé*.—Charcoal 52*s*. the barrique. Iron 23 liv. the hundred pound, or 1 liard less than 5*s*. the lb. They charge 8*s*. the lb. for heavy work, and 32*s*. for shoeing a horse.

Elbæuf.—The cord 8 feet by 4 feet, and 2½ high, 24 liv. 42

La Roche-Guyon.—Cord 8 feet by 4 feet, and 4 high, is 30 liv. 32

ISLE OF FRANCE.—*Nangis*.—Cord 12 feet by 4 feet, and 4 high: price 24 liv. to 28 liv. 18

CHAMPAGNE.—*Mareuil*.—Cord 8 feet long, 5 feet high, and 3 feet 7 inches broad, fells, oak 36 liv. 31

White woods 24 liv. 21

Charcoal 50*s*. the tonneaux, of 200 pints of Paris (quarts).

Epernay.—The cord 40 liv. 40

St. Menehoud.—Cord 8 feet by 4 feet, and 3½ inches: 18 liv. 10*s*.; in the town 19 liv.; but twenty-five years ago it was 7 liv. 10 feet, 24

LORRAINE.—*Braban*.—Cord 8 feet by 4 feet, and 4 high, is 19 liv. 20

Mar-le-Tour.—Cord 8 feet by 4 feet, and 4 high, is 16 liv.; the best 21 liv. 20

Metz.—Charcoal 30*s*. the sack: cord 8 feet by 4 feet, and 4 high; is 32 liv.: of beach and hornbeam, 35

Of oak, 22 liv. 24

Pont-à-Mousson.—Cord 8 feet by 4 feet, and 4 high: in town 16 liv. 10*s*. 18
In the forest 12 liv.

Nancy.—Cord floated oak 20 liv.; other sorts 23 liv. 28

Not floated oak 26 liv.; beech and hornbeam 34 liv. 37

Luneville.—Cord 8 feet by 4 feet, and 4 high: now 24 liv. to 28 liv.

Beach, 28

Oak, 22 liv. to 23 liv. 24

ALSACE.—*Strasbourg*.—Cord 6 feet by 6 feet, and 3 high: price 27 liv. 38

Schelestat.—Cord 6 feet by 6 feet, and 3 high: price 24 liv.* 31

Isle.—Cord 8 feet by 4 feet, and 4 high: price 12 liv. yet many iron forges, 14

FRANCHE COMTE.—*Bejançon*.—Cord 8 feet by 4 feet, and 4 high, floated, 16 liv. 10*s*. 18

Not floated, 25 liv. 27

* Some sold 6 feet by 6 feet, and 6 high.

Orchamps.

Price per
Paris load
of 140 ft.

Orchamps.—Iron; all used by blacksmiths; is of the country; 5*s*. the lb. Charcoal only used in making it, at 40 liv. the load of four horses, about 50 or 60 bushels; there are forges spread over the whole country: one within three leagues, which, with its furnace, uses 50 loads of wood per diem. Shoeing a horse 40*s*.

Dijon.—Cord 7½ feet by 4 feet, and 4½ high, at 26 liv. the mœul, a cube of 4 feet, and the price 13 liv. - - - 26

Price of carriage 20*s*. per thousand pound for each league.

Chagny.—Mœul, cube of 4 feet, 13 liv. to 16 liv. - - - 31
Iron: tier of wheels 7*s*. the lb. and 8*s*. for the nails. Price of iron 5*s*. 1 liard.

Moulins.—Cord, 2 to a coche, 30 liv. Charcoal 3*s*. to 3½*s*. the English peck. Iron 1 liard under 5*s*. per lb. Cast ditto 3*s*.

Clermont.—Cord 3 feet 11 inches, by 7 feet 4 inches circumference; price 6 liv. about one-fourth of a Paris cord, - - - 24
Charcoal 2*s*. the lb.

Fix.—Iron 5½*s*. the lb.

Montélimart.—Charcoal 5*s*. the hundred pound.

Pierre Latte.—Wood 20*s*. the hundred pound.

Avignon.—Wood 18*s*. to 20*s*. the hundred pound. Charcoal 3 liv. the hundred pound.

Tour d'Aigues.—Charcoal 45*s*. the hundred pound.

Marseille.—Wood 3 liv. 17*s*. for 300 lb. and 8*s*. carriage from the ship. In winter the same, 5 liv. Charcoal, by shipping, 50*s*. the quintal, 120 lb.; by land 70*s*.

Lyon.—Oak, the mœul, 3 feet 8 inches square, 23 liv.

General average, - - - 30

To these data may be here added, that the woods and forests of the kingdom amount to 19,850,515 acres, and that the average annual produce may be reckoned 14*s*. an acre. It here appears, that the average price per cord, of 140 cubical feet, is 30 liv.

The price of wood has risen considerably in France.—Price of the lignier, equal to two Paris voies, at Bourg, in Bresse.

In 1688,	-	-	3 liv.	0 <i>s</i> .
1718,	-	-	3	12
1748,	-	-	7	10
1778,	-	-	9	0
1789,	-	-	21	0*

• *Observations sur l'Agriculture*, par M. Varenne de Fenille. 8vo. p. 141.

The

The scarcity of wood in France, as marked in this rise of price, has occupied at least an hundred pens during the last ten years: almost all the cahiers complain heavily of it, and in that of the clergy of Meaux, they call it a real calamity. There is hardly a society of agriculture, in the kingdom, that has not offered premiums for memoirs that should explain the causes of such an alarming want, and point out the best means of remedying it. The opinion is universal; I have met but one mind upon the topic, which, considering the talents for political œconomy, surprised me a good deal; for I must declare myself of a directly contrary opinion, and venture to assert, that the price of wood is too low in France; that it has not risen so rapidly as it ought to have done; and that all ideas of encouraging plantations, to prevent a further rise, are ignorant and mischievous, and founded in a total misconception of the subject, for want of combining those circumstances which bear upon the question. The rent of arable land, in France, calculated separately, and rejecting the parts left waste, and in neglect, is 15s. 7d. an acre; but the rent of woods is only 12s. How then in common sense can any one complain of a price of wood, which, instead of being, at its present rate, an injury to the consumer, is actually a material one to the landed interest, who do not make by their woods nearly what they would do by the land, if it was grubbed, cleared, and converted to cultivation; and I am so well persuaded of this, that if I was the possessor of woods, in France, I would most assuredly grub up every acre that did not grow upon land impracticable to the plough; and I should do this under the firmest conviction that my speculation would be profitable. If tillage improves, and freed from tithes and inequality of taxation, no one can doubt but it will improve, the price of wood ought to rise very considerably to prevent landlords, who are well informed, from grubbing up; and let it be considered, how vast a premium there is to induce them to such a conduct, in all woods where the growth is antient, as forty, fifty, sixty and a hundred years, at which age many are found in France: the money which the sale of such would produce, placed at interest, and the land converted to tillage, would, in most instances, treble, and even quadruple, the revenue to be gained from the same land, while cropped with wood. Nor is it to be forgotten, that fresh wood-land is generally fertile; possessing stores that, with good management, in respect to cropping, may be made to last at least twenty years, and in some measure for ever. We may safely determine that the price of wood is not risen to a fair par with other land products, until it can no longer be the interest of the land owner to grub up, and till woods yield as good a revenue as the lands around them, *well cultivated*. It is an undoubted fact, that the price is not yet risen near to such a par.

There is yet another, and equally unquestionable, proof, that the price of wood is much too low in France, and that is the coal mines, found in almost

every part of the kingdom, remain, for the greater part, unworked; and that the people burn wood, even in the immediate vicinity of such mines; I was myself served with wood at all the inns, at and near the coal mines wrought, of Valenciennes, Mont-Cenis, Lyon, Auvergne, Languedoc, Normandie, Bretagne, Anjou, &c. &c. Is it possible to suppose that this would be the case if wood was risen to its fair par with other commodities?

The conclusion to be drawn, from this state of facts, is sufficiently clear, that the legislature ought not to take any steps whatever to encourage the production of wood, but leave it absolutely free to rise gradually to that fair price to which demand will carry it; and that the societies and academies of agriculture, composed of citizens, that is to say, commonly of mere consumers, uninterested in the production, ought to cease their unjust and impertinent clamour against the price of a commodity which is much too cheap. Whenever the price of wood rises too high, coal mines will every where be effectually worked, and the people in sight of them most assuredly will not burn wood.

We have of late had, in England, the same vulgar apprehension of a want of wood, especially for ship building, which has disgraced France. No wonder timber has been destroyed in both kingdoms, while the price was inadequate to the expence of raising it. Timber for ship building, as well as cord-wood, should at least bear a proportion with corn, meat, butter, wool, &c. which the ground might yield if not occupied in a different manner. The comparisons made are by landlords, who look only at *rent*, but the national interests require that *produce* should be consulted. The argument commonly used, by the proprietors of the *landes* of Bourdeaux, against cultivating them, is, that they yield at present, in pines, a better *rent* in resin than they would do for cultivation, which is certainly true, if the culture introduced was not good; but what a loss to the nation to have lands employed to yield, like all the woods of the kingdom, a gross produce of 16 liv. per acre, instead of 40 liv. the produce of arable land? Those who contend for encouragements to planting, because wood is dear, call for the marvellous improvement of converting land, which now yields 40 liv. to the state of yielding 16 liv. ! It is just the same in England, our societies offer premiums for planting, and, as far as those premiums are claimed, or induce men to think planting an improvement, they are attended with the mischief and absurdity of preferring a small to a great produce. There are tracts of *impracticable* land, I will not say *waste*, because nine-tenths of our waste lands, like those of France, are susceptible of cultivation, and therefore it is a public nuisance to plant them: it may be profitable to the landlord to plant quick growing trees, because he considers only *rent*, but societies and the nation should look at *produce*, and consequently discourage all planting.

The

The common argument, that is founded on the supposed necessity of a Royal Navy, I should be sorry to bestow three words upon; for I hold every idea of a great naval force to be founded on very questionable theories. Injurious to other nations in its object, which is that of extending to the most distant parts of the globe the mischievous effects of ambition; and all the horrors that attend the spirit of conquest, when flowing from the worse spirit of foreign commerce. A great navy affords the means of spreading what may to Europe be called a domestic quarrel to the most distant regions of the globe, and involving millions in the ruin of wars, who are in justice as unconcerned in the dispute as they are removed by distance from the natural theatre of it. And whatever commercial necessity, founded upon the worst principles, may be urged in the support of it, yet the expence is so enormous, that no nation, it is now well understood, can be formidable both at land and sea at the same time, without making efforts, that throw our own burthens, by means of debts, on our innocent posterity. Mr. Hume remarks, that the British fleet, in the height of the war of 1740, cost the nation a greater expence than that of the whole military establishment of the Roman Empire, under Augustus, while all, that deserved to be called the world, was in obedience to his sceptre; but in the late war, the expence of our fleet amounted to more than the double of what attracted the notice of that agreeable and profound politician, for the naval expence of 1781 arose to 8,603,884l.

The ambition of statesmen is ready at all times to found upon a great commerce the necessity of a great navy to protect it; and the next step is, the supposed necessity of a great commerce to support the great navy; and very fine arrangements, in political œconomy, have been the consequence of this mischievous combination. The delusive dream of colonies was one branch of this curious policy, which cost the nation, as Sir John Sinclair has calculated, two hundred and eighty millions! Rather than have incurred such an enormous expence, which our powerful navy absolutely induced, would it not have been better had the nation been without commerce, without colonies, without a navy? The same madness has infested the cabinet of France; a great navy is there also considered as essential, because they have in St. Domingo a great colony; thus one nuisance begets another. The present century has been the period of naval power. It will cease in the next, and then be considered as a system founded on the spirit of commercial rapine.

But whatever necessity there may be for navies, there is none for raising oak to build them, which it is infinitely better to buy than to cultivate. There is no prospect of exhausting the oak of the north, of Bohemia, Silesia, Poland, Hungary, and the territories on the Adriatic, for centuries to come; the price will rise as carriage becomes expensive, but the supply will remain for ages. So long

ago as the beginning of the last century, we used fir for building, from the scarcity of oak *; and notwithstanding the immense consumption, since the countries that supply it promise to continue that supply for five centuries to come.

A vessel of the first rank is said, in France, to demand 60,000 cubical feet of timber †; but a later account makes it much more considerable.

	Quantity in a Ship of 116 Guns.		Quantity in a Ship of 74 Guns.
Cubical feet,—First species,	77,520	—	47,356
Second ditto,	39,840	—	16,161
Third ditto,	5,896	—	12,300
Fourth ditto,	1,250	—	1,780
Fifth ditto,	180	—	19
Plank,	1,995	—	1,497
	126,681	—	79,113
Fir,	8,449	—	6,338‡

The common price of oak 3 liv. the foot.

I cannot quit the subject of woods without remarking, that many of the nobility, in France, have given that attention to the introduction of exotic trees, which would have been a thousand times better applied to improving the agriculture of their districts: I saw many places, the owners of which affected to make a reputation by their evergreens, and other plantations, while living in the midst of lands, under a cultivation disgraceful to the kingdom, and the same even on their own farms. For one sol that France will ever be improved by their exotics, it was in their power to have improved her many louis, by very different exertions.

* “ And now of late, for want of other timber, we begin to use fir for building] of houses.” *An Old Thrift newly revived, or the Manner of Planting, &c.* by R. C. 4to. 1612. Black letter. P. 7.

† *Recherches sur la Houille d’Engrais.* Tom. ii. p. 25.

‡ *Encyclopédie Methodique.* 4to. *Marine.* Tom i. part 1. p. 163.

C H A P. XVII.

On some Economical Practices, in France.

SOME scattered minutes, not absolutely useless, may, perhaps, better be thrown together than burnt; for ingenious men sometimes catch hints from a slight mention of practices, and apply them to uses not at first thought of.

Building.

LANGUEDOC.—*Montauban to Toulouse.*—At a brick-kiln, observe that they burn only faggots of vine-cuttings.

Bagnere de Luchon.—For building the new bathing-house erecting here, by the states of Languedoc, they work the lime (burnt from a fine blue hard stone) with gravel instead of sand, of which they have none in the country; and, on examination, I found this gravel to be a true lime-stone one, the same so often met with in Ireland. I could not find that the mortar was the harder or better for this; but, on breaking, rather softer than that of sand. They have here a very effectual method of cementing stone; when squared blocks break, they join them very easily, by applying this cement;—resin, three-fourths; sulphur and wax, one-fourth; powdered stone, of the sort to be joined, enough to give it the right consistence when melted. This holds the stone so firmly together, that the solid part will break rather than at the junction.

NORMANDIE.—*Carentan to Coutances.*—They build here the best mud houses I have any where seen; very good ones, of three stories, are thus raised; and considerable offices, with large barns. The earth and straw, well kneaded together, are spread, about four inches thick, on the ground, cut in squares of nine inches, and these tossed from a shovel to the man on the wall, who builds it; it is finished, layer by layer, and left for drying, as in Ireland; the layers three feet high, and the thickness of the walls about two feet; they make them projecting about an inch, which they cut off, layer by layer, perfectly smooth; if they had the English way of white-washing, they would look as well as our lath and plaster houses, and be vastly better and warmer. In good houses, the doors and windows are in stone-work.

Bernay.—Mud walls to inclose gardens, and for fruit, well built and thatched at top.

CHAMPAGNE.—*Epernay.*—Mons. Paretclaine's new oak floor, which is the common fashion of France, of short scantlings, in a sort of Mosaic, costs 40 liv. the square toise of 6 French feet, including joists and all. They are dove-tailed
along

along the sides, but nailed at the ends; the nails knocked in, and a plug of wood driven in and plained off.

Lime.

LANGUEDOC.—*Bagnere de Luchon*.—The lime-kilns here, while burning, have a remarkable smell of burning sulphur, from the quantity of that mineral, with which the lime-stone is mixed. They build their kilns oval, swelling in the middle, with a mouth, not quite at the bottom, where they put in the wood: the upper part is covered with stones, in order to keep the heat in. They are 24 hours burning the lime. When burnt, stop the mouth close, and leave it to cool, which takes three days; after which, they take the lime out. A kiln holds 400 septiers, which may be supposed the septier of Paris. They carry, with a pair of oxen, but 2 septiers. Sell it at 40*s*. to 45*s*. the septier. Such a quantity of lime takes 600 faggots to burn, and a little other wood.

FLANDERS.—*Armentieres to Montcassel*.—Heaps are lying in some of the fields, ready for spreading. It is burnt in the country.

MAINE.—*La Fleche to Le Mans*.—Lime burning; the price 5 liv. the pipe, of 2 barriques.

Beaumont.—Lime-stone plentiful, yet lime 10 liv. the pipe.

Alençon to Nonant.—Lime-stone every where, yet lime 16 liv. the tonneaux, of 2 pipes.

BOURBONNOIS.—*Moulins*.—Lime 55*s*. the poinçon, 30 inches high and 22 diameter.

VIVARAIS.—*Pradelles*.—Lime 9*s*. the measure of 32 lb.

Fences.

NORMANDIE.—*Pays de Caux*.—The fences here resemble more the double banks and ditches of Ireland than any I have seen: parapet banks are thrown up out of a double ditch, sloped; and upon them are planted a hedge, and one or two rows of trees; and the soil is so rich, that all thrive to such a pitch, as to form hedges 40 or 50 feet high, and perfectly thick. By means of some small inclosures of this sort, around every house, every habitation is a redoubt, and would make the country very defensible for a small army against a great one.

Pont L'Eveque.—Many of the rich pastures here are so well fenced, that one can no more see through a single hedge, than through a wood; yet there are many willows in them, with only a mixture of thorns and bramble; but they are so well trained, and of such a luxuriant growth, as to be impenetrable to man or beast.

In fencing little is to be learned in France, yet a considerable portion of the kingdom is inclosed. In England we have carried that art to a perfection of which

which the French know little. It is only in a few districts, where gates and stiles are regular; in others, a few bushes, put in a gap, supply the place. Whenever the French have invested in their agriculture, the sums it ought to attract, at least three or four thousand millions of livres more than in it at present, these objects will receive an attention which they have not yet commanded. They are, by no means, unimportant; and, as far as connected with inclosing, in general, are essential to prosperity.

Fish Ponds.

SOLOGNE.—This province abounds very much with ponds of all sizes, which let at from 5 liv. to 12 liv. the arpent.

BOURBONNOIS.—*Moulins.*—Through every part of this province, which I saw in crossing it, in two directions, the number of fish ponds is very considerable. The country, though in extensive views flat to the eye, is, on a nearer examination, found to swell into a variety of gentle inequalities, which form valleys, with small brooks, springs, or streams, in them, as eligible for a residence, and agreeable to the eye, as it would be beneficial to cultivation, if they knew how to apply them. Mounds are made across these little vales, to form ponds; and there are mills at their heads, when the streams are considerable enough. These ponds are from two or three to ten, twenty, and thirty acres, and some a great deal more. They are all fished regularly every second or third year, and the fish sold, at so much a thousand, to the merchants, who send them, by the Allier, Loire, canal of Briare, and Seine, to Paris. On one estate, I saw eight ponds, that paid 800 liv.; on another, four paid 800 liv.; and, on a farm of about 400 acres, four ponds paid 1000 liv. Water deceives one so much in guessing the superficies, that I may be erroneous (for nothing is measured in this province); but I should guess, that land under water paid 20 liv. an acre at least, instead of 3 liv. which is the more common net produce of the country; and, at the same time, that the proprietor receives this superior benefit, his table is, by the terms of the contract with the merchant, who stocks the ponds himself, allowed to be amply supplied.

BRESSE.—The ponds of this little province and Dombes, cover 66 leagues square of country, and are found terrible to population, from the effect they have on the climate*. In 1764, ponds in France generally let at 5 liv. to 7 liv. per arpent†.

The management of ponds is vastly better understood in France than it is in England, both as to stocking, adapting the sort of fish to the soil, clearing the

* *Observ. sur L'Agricult. par Mons. Varenne de Fenille, p. 270.*

† *Chanvalon Manuel des Champs, 12m9. P. 363.*

ponds, emptying, fishing, &c. &c. In all Catholic countries, fish is of more importance than in Protestant ones, and this occasions more attention being paid to them.

Leaves.

LANGUEDOC.—Gathering, the end of July, leaves of mulberries, for feeding cattle.

POITOU.—See them gathering elm leaves for cattle, particularly for mules, the first week in September.

TOURAIN.—Clipping elm trees, to feed cows, in September.

Near Clarey, they gather the vine leaves in September; we saw them spread, in large quantities, by the sides of the roads, with many women, girls, and boys, gathering and drying; they are for winter provender for their cows; this custom is general through the country. They make an infusion of these leaves in hot water, by boiling them with some bran; which mixture they give to their cows, in snow or frosty weather, with straw. Was a cow fed with leaves alone, it would require 8 or 10 arpents to support a cow the whole winter; they reckon them very beneficial for this useful animal. Leaves are sometimes sold, in which case, such a heap dry as would equal 30 lb. of hay, sells for 20s. but all this varies according to the year. An arpent produces seven or eight times that quantity.

ISLE OF FRANCE.—Among the winter provision which Mons. Cretté de Pauluel, of Dugny, makes for his sheep, is that of faggots, cut in summer while in full leaf, and housed as soon as dry: these he has found to be of considerable use, and to answer the purpose perfectly well. When given to the sheep they pick off every leaf carefully. Such a practice well deserves attention in England.

DAUPHINE.—About Montélimart the leaves of all mulberry trees are gathered in November for feeding sheep. A gentleman, near the same place, feeds a flock of Spanish and half bred sheep, with faggots cut in summer from full leaved trees.

PROVENCE.—The president de la Tour d'Aigues making elm faggots, in September, for his sheep; a common practice: poplar also and oak; indeed all sorts are thus applied. Olives are also excellent; one of twelve years growth will thus yield to the value of 12s.; every second year, on good land, more than the expence.

For the better understanding this subject I beg to refer the reader to an excellent and useful memoir on the subject, by Mr. Professor Symonds, inserted in the *Annals of Agriculture*, vol. i. p. 207.*

This is one of the economical practices of France, which well deserves imitation in England; not gathering leaves, for I question whether it would answer the

* See also *Mem. de la Soc. Roy. d'Ag. de Paris.* 1785. *Trimestre d'été.* P. 22.

expenditure of labour, but cutting faggots in summer instead of winter; drying them like hay before binding, and then stacking and thatching for feeding sheep. I made a stack of them in 1789, but the two following winters were so open and mild, that I could not experience the benefit. I shall, however, make other trials on the practice, for I have not the least doubt of its answering as well here as in France. Leaves are very nourishing, but astringent, and wholesome for sheep, and such stores might be got at easily when the ground is covered with snow, to the great saving of hay. Considering the immensity of leaves that fall to waste, in a woodland country, it is certainly an object that well deserves attention.

Threshing.

ROUSSILLON.—LANGUEDOC.—Through all the southern parts of this province, they tread out the corn with horses and mules; a man in the centre of the threshing floor, in the open air, drives them round, and other men supply the floor, and clear away the straw. In some conversation I had on this method, between Narbonne and Niffau, I was assured it was far preferable to the use of flails. That 24 mules or horses, and 12 men, would *depiqué*, as they term it, 150 septiers of wheat in a day. That some farms produce 2000 septiers of corn; what would flails do for such a quantity! I examined the wheat, and did not find it more damaged than with flails; but the climate is to be remembered, which makes the grain much harder than any with us. Seeing some flails going also, I demanded the reason, and was told that the master would sometimes have particular parcels of straw threshed so, to get the corn that was left in it, if he suspected too much; at others the labourers desire to do it for themselves, which is sometimes granted.

DAUPHINE.—*Loriol*.—But Mons. Faujas de St. Fond, has tried threshing the corn all at once with flails, and finds it much better than with horses, &c.

Monrejeau to Lann-Maison.—The oats are all mown to the standing corn; one woman follows each scythe, gathers and lays them in gavels, ready to be bound afterwards in sheaves.

Orange to Avignon.—The same method of threshing with horses, &c. prevails here; and they stack their straw very neatly, plaistering at top with white clay, mixed with straw and water.

PROVENCE.—*La Tour d'Aigues*.—Seeing a large quantity of the President's wheat spread on cloths, for drying in the sun, and inquiring what it meant? I found it was washed, as all is, of which the best bread is made; owing, beyond all doubt, to the mode of threshing, which renders it so foul that this operation is necessary.

C H A P. XVIII.

Of Tillage, and the Implements of Husbandry, in France.

NOT an object of the first consequence, but of too much importance to be neglected by a farming traveller. In a climate in which the sun has power to burn up weeds, with only a scratching of the soil, and in a territory where harsh, obstinate, churlish clays are almost unknown, perfection of implements, and great powers of tillage, are not so necessary as in the less favourable climate and soil of England.

Of the Tillage, and Laying of Lands.

PICARDIE.—*Calais.*—Lands well and straight ploughed ; three horses.

Montreuil.—All turn-wrest ploughs ; which, from having two breasts, go alone almost as well as with holding ; I saw a man leave his plough to chat with the driver of a load of bark, and the five horses went on and performed their work as well without as with him : the double breast occasions the cutting double work. The man, while I held it for a bout, told me that his master expected him to plough 30 measures thrice in the summer.

Bernay.—A pair of horses.

Abbeville.—Very badly, with four asses or two horses. Feed their asses with hay and oats.

Piquigny.—Women ploughing with a pair of horses.

PAYS DE BEAUCE.—*Toury.*—Do not give the first stirring to their fallows until May. Plough well, straight, and clean.

SOLOGNE.—*La Ferté.*—Plough their poor sands all on three feet ridges ; and assert that without them they should get no corn, as they preserve the sand from plastering in rains : this is an odd idea, as plastering such sharp sand is usually a means of improvement ; but showers here certainly fall with much greater violence than with us ; their crops, however are so beggarly as to give no weight to their opinions. Their teams of horses are kept out all the year, as they have the pasturage of the landlords woods for them. What a barbarous system ! Plough an arpent a day with three. Plough also with six oxen, and this in sand.

To La Motte Beuvron.—Plough with eight bullocks, and on sand ! Buck-wheat is given before winter, mixed with oats ; if alone, before it has had a sweat, it gives the cholic ; but afterwards, alone safely.

Nonan le Fusilier.—For two years past, chaff cut at the post, of rye straw, mixed with buckwheat, for horses, and found excellent: the scarcity of forage alone drove them to this useful experiment.

La Loge.—Through all Sologne the land is ploughed on to the two-bout ridge of three feet, and they never stir it in any other way.

Salbris.—Plough their sandy gravels with six to eight oxen, that are pretty good, selling for 6 or 7 louis each.

BERRY.—*Verson.*—Tillage all done with oxen, harnessed by the horns: a pair draw a plough; some are not bigger than our Alderney cows; the furrow about four inches deep, but hardly to be called a furrow, so irregularly and ill cut. They are now ploughing up oat stubbles for wheat: an Englishman can hardly conceive what work they make; they give four of these wretched scratchings for every crop.

NORMANDIE.—*Argentan.*—Wretched ploughs drawn by four oxen.

LIMOUSIN.—*Limoges.*—Plough throughout the province with oxen or cows, harnessed by the horns.

QUERCY.—*Pellecoy.*—Walked from the road to a peasant at plough with two cows, about as big as Alderney's; it is not possible for an English farmer to conceive how badly; trenches, $3\frac{1}{2}$ or 4 inches broad and 2 deep, were scratched parallel to each other, and the earth driven aside by two mould-boards, some one way, some another; no coulter to the plough: they do about an English rood a day. A shim, where there are no stones, and a Kentish nidget, where there are, would do the work much more effectually, and ten times as quickly. But their burning sun destroys weeds better than such tillage. Their hoeing is excellent and effective, and to this their crops are more owing than to their ploughing.

Caussade.—The lands ploughed as straight as in Suffolk; all by oxen or cows.

LANGUEDOC.—*Montauban.*—Plough with oxen, without either reins or driver.

Toulouse to St. Lyce.—The ploughs better, the mould-boards being larger. The fields are thrown into fatches or flat lands. Ploughs are ox-hoeing the vines, each ox walking in an interval with a row between them, and yoked with a sliding yoke, to vary the distance from ox to ox, and baskets at their mouths to prevent their biting the vines. The rows at five feet, and the plants at two.

Bagneres de Luchon.—They ox-hoe the rows of their maiz. All oxen yoked by the horns.

ROUSSILLON.—*Bellegarde to Perpignan.*—Plough with mules yoked; also with asses in the same way. Earth-boards of the ploughs are to the left.

Pia.—Day's work of a man, his plough and team, 3 liv.

LANGUEDOC.—*Narbonne*.—Of many ploughs now going (July), most aer drawn by mules, in yokes; the plough beam fastened to the centre of the yoke; earth-board to the left. They plough well.

Pezenas to Montpellier.—The oxen all yoked by the horns. Ploughing olive grounds with one horse; the plough of an odd construction, the beam dividing and forming shafts for the horse.

BEARN.—*Pau to Moneins and Navareins*.—All this country is ploughed with oxen that are good, and in good order.

GUIENNE.—*Agen to Aiguillon*.—Plough with very fine cream-coloured oxen, a pair to a plough. All draw by their horns.

Tonneins.—A pair of very fine oxen plough a journal a day; that measure contains 33,750 square feet, and is to the English acre as 33 to 38. The plough beams all fasten to the yokes.

To La Motte Landron.—They are now (August) ploughing for *jarouche* and forage (by the last is meant oats for soiling), and are very attentive in the ordering and finishing their lands, and covering the seed; breaking the clods with a wooden beetle and rake, so that the high ridges are brought down in such a manner as to admit the scythe, and at the same time the furrows are kept open.

Barsac.—They are now ox-hoeing their vines quite clean; and see one piece of osiers ox-hoed.

POITOU.—A pair of oxen without either driver or reins.

TOURAIN.—*Montbazou*.—Horse-ploughs; saddles on the horses with a bar like a curricule, one from saddle to saddle, to which the beam of the plough attaches. A bad plan, as by this means the horse does not draw from his shoulders, where his strength and weight lie.

SOLOGNE.—*Chambord*.—The poor sands of this country are laid on the three feet ridge of two-bouts, and rye and buckwheat sown on them; the furrows are as wide as the ridges, and yield nothing but weeds.

La Chapelle La Reine.—Plough with two horses and no driver, yet the price per arpent is 5 liv. 100 perch 22 feet.

ISLE OF FRANCE.—*Mellun*.—Plough into broad flat lands, and very straight. Many ploughs with three horses, one before a pair; no driver.

Liancourt.—In the general arrangement of their farms, they reckon three horses to a plough, though they never use more than two at a time; and a plough to 75 arpents (1½ acre), 25 of which are fallow; and a common calculation here is 1500 liv. rent per plough, which makes 20 liv. per arpent. They never used oxen until the Duke of Liancourt introduced them from England.

Paris to Villers Coterets.—The whole way the lands are ploughed quite flat, with a turn-wrest wheel-plough, and much of the wheat is overflowed, for want of furrows to carry off the water from the late rains.

PICARDIE.

PICARDIE.—*La Fere*.—Four horses in the ploughs, and no driver.

St. Quentin to Cambray.—Thirty-five horses to a farm of 800 septiers; and twenty horses on one of 400. The latter proportion is seventeen on 400 English acres.

FLANDERS.—*St. Amand*.—This season (November 1, 1787) the wheat here, owing to the excessive rains, is put in as badly as possible. The lowest and wettest fields are perfectly flat, and half of them, in parts, overflowed. Furrows are drawn, as marks for digging, which is doing, through all the country, with a narrow spade, of 5 inches wide, and 8 long; these furrows are from 6 to 8 yards asunder, but done poorly, miserably crooked, and the whole unfightly.

Lille.—There is a minutiae of labour and attention given to land in this country, which must, in the nature of things, result from that over-population which is found every where in France, on small properties. I saw many men and women hoeing up the land with great mattock-hoes, almost a foot square, with long handles; by which they are lifted high, that in the fall they may cut 4 or 5 inches deep. They work by lines that mark out beds, 5 or 6 feet broad, along which other men dig out trenches, a full spit deep, spreading the earth over the beds. Wheat seed is then sown, and covered by a man's drawing a wooden harrow over it: another follows with a hoe, to cut clods, and level inequalities. I calculated, in my mind, what this would cost me in Suffolk, and I made it amount to 3l. 10s. per English acre. Such operose methods are not in practice here, because the labour which comes to market is cheap, since such labour, like every thing else in Flanders, is what is commonly called dear: it springs alone from the population that is attached to the possession of land in property; and is, relative to any other country, a system of trifling; a waste of labour not greatly better than picking straws. Perhaps it is owing to this over-population of the fields, that Flanders, with the richest soil in Europe, cannot feed her own towns, but is forced to import large quantities of wheat from Artois and Picardie, where large farms enable those provinces to spare to the wants of their more subdivided neighbour.

About four or five miles from Lille begins another method of laying their lands; it is that of ploughing them up, in very broad high arched beds, of all breadths, from four rods to ten or twelve. When inclosures are small, a whole one is formed into but one land; and in larger fields, there is a drain left at every parting furrow, which is either planted with a row of alders or willows, or dug into a trench and laid to grass. In a land ten or twelve rod wide, the centers may rise four or five feet higher than the bottoms of the furrows; the slopes on each side very gentle and regular; and so equal, that all water is effectually drained off. I discoursed with some farmers on this method, stating objections

objections and hearing their answers. They insist, that no other method of laying land dry, is so effective, cheap, durable, or commodious. That all the methods I mentioned, are known and practised in some part or other of Flanders, but that all the best husbandmen have one opinion, are united in thinking this mode superior to all others. That planting alders or willows (which are always kept low, by constant cuttings), or having grass in the furrows, are not necessary parts of the system, and that the furrows, in a few years after throwing up the lands, are as good as the rest of the field. The neatness and regularity with which the system is executed, is extraordinary; the borders, headlands, and sides of fields, are so dug away, that a small one has the form of a feather-bed, the feathers of which are driven towards the middle. I never saw this system so well executed as here, though I have known it copied in England; not in the high lands of many of our counties, which are, on comparison, a barbarous method, but in the practice of a few individuals who had seen the effect in Flanders.

Armentieres.—Passing this town, meet with another exertion of industry, that deserves attention. Many stubbles were ploughed into beds eight or ten feet wide, and the furrows digging out, and the earth spreading on the beds. I supposed this was for wheat, but, on inquiry, found that these fields were intended for beans. They leave the land, thus prepared, till March, and then plant, without further tillage. As spring tillage is thus avoided on wet land, the system must be admitted to be excellent.

Mont Cassel to Berg.—The lands not raised so high as those above-described, nor with equal skill or attention, and this wet season (November) shews the consequence of it; they cannot get on to their lands to sow wheat, but most of the high lands are sown, and some of them green.

Artois.—Lillers to Bethune.—The lands broad and arched; but gently. From Ardres to Bethune, all the way, the greatest attention to plough the land the moment the corn is carried, yet much is now uncut and ripe.

To Arras.—They are now (August 8,) ploughing the stubbles of such corn as is carried, with one horse, that walks, not in the furrow, but on the unploughed land, by the side of it: the plough beam very short, with a foot; no coulter; a well-curved breast and throat; but too wide in the heel: stir shallow, and do not make good work; do about a measure a day.

Normandie.—Rouen.—All the harrowing is done in this country, by men leading many horses. I saw one man leading seven horses, each drawing a harrow: the horses are tied one behind another, obliquely, so as to be out of danger of the harrows.

Bretagne.—Rennes.—Plough with four horses and a driver; or two horses and two oxen.

Vannes.

Vannes.—The common plough team, two oxen; always harnessed by the horns, and a little horse, a mere poney, before them; if no horse, the oxen are led by a woman. They use awkward, ill made, but light, wheel-ploughs.

Auvergnac.—The farmers (metayers) have here the Essex custom of digging away the borders and margins of all arable fields, and carrying them on to the land, which they practice very exactly, as it is done in that county.

ANJOU.—*Migniame*.—They plough deeper, in common, than ever I saw in any part of either England or France; eight or nine, and even ten inches deep; using six or eight good oxen of the Poitou breed; but it is done, in one respect, badly,—their depth obliges them to carry a furrow a foot wide, yet their share is not six inches; and they do every thing on four-feet ridge-work. The great strength of the team is most wanted for the roots of the fern, which are now lying about the land in heaps.

La Fleche to Le Mans.—They are now ploughing sand land, very slowly, with four bullocks and two horses. Preposterous!

NORMANDIE.—*Beaumont*.—Two bullocks and two horses, to draw thirty bushels of dung.

To Alençon.—Plough with four or six bullocks, or horses, and a driver.

Bernay.—Wheel-ploughs, with two horses, and no driver. The rich loams here are on broad lands, very well arched.

Tostes.—Wheel-ploughs; three horses, and no driver.

To Dieppe.—Ditto; well ploughed, flat, and deep.

BRIE.—*Neuf Moutier*.—Mons. Gibert, a considerable farmer and proprietor, keeps fifteen horses for 300 arpents of rich loamy clay (375 acres English).

CHAMPAGNE.—*Chalons to Ove*.—Plough with one horse.

To St. Menebould.—Plough with four horses, without a driver; turn-wrest ploughs.

LORRAINE.—*Mars-la-Tour to Metz*.—Fallows dunged, after ploughing with six horses (July).

Luneville to Blamont.—Broad lands, and some arched, but no water-cuts, consequently the crops much damaged, whenever rain falls. Plough with four, six, and eight horses, cows, and oxen; all mixed sometimes. I have seen women holding the plough, and a boy driving: wheels, but not turn-wrest.

ALSACE.—*Saverne to Wilteim*.—Here is a remarkable custom, of both waggons and ploughs being driven by postillions.

To Strasbourg.—The lands broad and arched, as in Flanders.

To Schelestat.—The same lands on the flat rich vale.

Colmar to Isenheim.—Oxen here improve much on the preceding country: they are harnessed by the horns, drawing singly in lines, and also mixed with horses.

To

To Béfort.—Plough with a pair of oxen, without line or driver. Arched broad lands.

BOURGOGNE.—*Dijon.*—Plough with six horses.

Bourbon-Lancy.—Plough with six oxen, that draw by the horns. A level country; a sandy gravel.

BOURBONNOIS.—*Chavannes.*—All the arable thrown into one-bout ridges, about sixteen inches broad.

AUVERGNE.—*Riom to Clermont.*—Plough with a pair of oxen.

Clermont to Issoire.—Ploughing with oxen only; some of them good; all draw by the horns.

Fix to Le Puy.—Miserable ploughing; the plough has one long handle; and the man holds a long light pole in the other hand for a goad: a pair of little oxen.

DAUPHINE.—*Montélimart.*—Plough with two mules.

There is no part of England where lands are laid so neatly as in Flanders; but the French have no other province that partakes of this perfection: Alsace is in a similar system, but not so well executed. In general, the tillage of the kingdom is most miserably performed; and many of the provinces, are, in this respect, so backward, that, to English eyes, they appear to be pitiably conducted.

The principal question that arises upon tillage is the comparative advantage of using horses or oxen. Both have had their advocates. The principal opponents to oxen were the œconomistes, that fanciful sect, of very worthy and ingenious men, who, from their chambers at Paris and Versailles, offered opinions upon every part of the farmer's business. They divided the arable lands of France into those managed in the great and little culture; in the former, the tillage done with horses, and in the latter, with oxen; and as Flanders, Picardie, Normandie, &c. where horses were in use, being also let at money rent, those provinces were necessarily more at their ease than Sologne, Berry, Limousin, and others in the hands of metayers. This comparison is often made in the writings of the œconomistes, and abundantly more stress laid on the nature of the team than it deserves; they gave many calculations to shew, that horses were more advantageous, but all founded on false data; for they allowed only two horses to a plough, but four or six oxen, forgetting that in Guienne, Quercy, part of Languedoc, &c. a pair of oxen plough as well as any pair of horses; an omission this the more extraordinary, because those provinces are among the best cultivated in France: the district of the Garonne is like a garden, and the oxen, large, vigorous, beautiful, and in fine order, the very contrary of the miserable half starved beasts, described by the Marquis de Mirabeau, Mons. Du Pont, Du Quesnay, and other œconomistes. The comparison has been made in England with great accuracy; and the opinion now is, that oxen are the most beneficial

beneficial and the most profitable, and that a pair of good oxen will plough as much in a day as a pair of good horses. The other œconomical points of the comparison are all in favour of oxen.

But though the superiority, both in saving to the farmer, and in national benefit, is clearly in favour of oxen, yet there want improvements to be made in training and working them. Some step well, and move with as much freedom and activity, on a walk, as horses, but this is not the case with the generality; they are trained to go too slowly, and demand, *for light work*, more hours than horses. This is certainly owing to negligence and idleness of workmen and farming servants, for I am well persuaded, from circumstances I have remarked in them, that they are capable of great activity and quick motion. I have had them of a large size, which have taken leaps that no horse in the world would attempt, a proof not of activity only, but of great muscular strength.

Accustoming them to more speed, even to a trot of five or six miles an hour, is certainly as practicable, in the cool climates of Europe, as it can be in the burning ones of Asia. The fact that they draw coaches at that rate, in the East Indies, seems to have been long ascertained. The Targuzinian Tartars ride on their oxen *: the Nogayan Tartars, of Koundour do the same †: Mandelsloe ‡ rode on an ox part of the way from Agra to Dehli, that carried him seven leagues in four hours: in Kachemire they saddle, bridle, shoe, and ride them as fast as horses ||; they also draw their coaches: at Surat, in riding them, they take care their horns are not more than one foot long, to avoid being struck when flies bite; they never shoe them but in rough places; in the caravan from that city, they carry 300 to 350 lb. §: a camel carries 900 to 1000 lb. ¶: but in a late account, of great authenticity, 500 and 600 lb. is mentioned as the common load of a camel in crossing the Arabian deserts **: the hackrees, a sort of coach, is drawn in Indostan by oxen; which, when well trained and managed, will maintain their rate against horses at full trot; those of Guzerat and Cambray are as large as Lincoln beasts, and white ††: the oxen that are rode in Formosa, go as well and as expeditiously as the best horses, by being trained young ††: the Hottentots train oxen to gallop and even run down an elk §§.

If such quickness of movement could be given to the oxen of France and England, it would be a very considerable object, for it would get over the principal objection to them, and would at the same time render them applicable to a great variety of uses, to which at present they are never put.

* *Isbrandt Ides. Harris' Voyages*, vol. ii. p. 936.

compose that Empire. 8vo. 1780. vol. ii. p. 85.

Le Blanc's Travels, p. 54.

vol. lxxx. part 2. p. 136.

Description of China. 8vo. vol. i. p. 226.

§ *Harris*, vol. i. p. 827.

†† *Grose's Voyage to the East Indies*, p. 249.

§§ *Sparman's Cape of Good Hope*, 4to. vol. i. p. 230.

† *Russia; an Account of all the Nations which*

‡ *Harris*, vol. i. p. 764.

|| *Ib.* p. 814. and

¶ *Ib.* vol. ii. p. 883.

** *Phil. Transf.*

†† *Grozier's General*

Of the Implements of Husbandry.

PICARDIE.—The harrow teeth of wood, all the way from Calais to Clermont. Turn-wrest ploughs, and bad.

SOLOGNE.—The ploughs have all a broad double finned share, and double mould-boards, with wheels; the whole ill constructed.

BERRY.—The plough very ill made; it has two scraps of something like mould-boards, and a long ground-rest, at the end of which is an iron share, four inches wide, something like the shim which they use in Kent for earthing up beans: a hole for a coulter, but I saw none used. Nothing can be worse than its work. They have also turn-wrest ploughs, something like those of Kent, but bad. Beyond Argenton, the beam of the plough fastens to the yoke of the oxen; the plough has a chissel-rest and point, and no other mould-board than two small sticks, stuck in it, with a circularly bent one behind; these sticks answered the purpose of two mould-boards, but very badly; the handles so low, that the body of the ploughman is in a bent position to hold them.

LIMOUSIN.—The ploughs which I saw near St. George, &c. have one mould-board on the left side; the share long, and $1\frac{1}{2}$ inch broad; the beam reaches to the yoke, and consequently saves traices. They plough better than in La Marche.

QUERCY.—The same long beams to ploughs that reach to the yoke; have two very bad mould-boards; the share long and narrow, with no coulter; but the land excessively stoney.

LANGUEDOC.—*Montauban to Toulouse*.—The plough much better than many I have seen in France; it has a broad coulter, and a short nosed share; one mould-board, and that to the left; the plough beam, like many others, fixes to the ox-yoak.

To Noe.—Meet waggons for the first time; the wheels shod with wood, that is, wood upon wood. The oxen all cloathed with linen against the flies, one tape under the tail, and another round the neck. The price of these waggons new is 60 liv. (2l. 12s. 6d.); they carry, with a pair of oxen, two casks of wine, containing 4 barriques, which is 20 quintals, or about a ton English. Some pairs of oxen will draw 40 quintals.

GUIENNE.—*Tonneins*.—The ploughs have very long hollow or fluted mould-boards, for lifting the furrow, in order to make sharp high two-bout ridges.

ANGOUMOIS.—*Barbessieux*.—Wheel-ploughs.

ISLE DE FRANCE.—*Melun*.—Large heavy wheel-ploughs, with breasts as wide and thick in the throat, as the heel is broad; must go very heavy for the horses.

Commerle.—Wheel-ploughs drawn by a pair of horses.

Dugny.

Dugny.—One of the best implements I saw in France, was the chaff-cutter of Mons. Cretté de Paleuel; it consisted of two cylinders, with edges that worked into the vacancies of each other, and, sucking in the straw delivered very rapidly, cut it into coarse chaff; one man fed the machine, by spreading the straw on an inclined plane; and a boy drove a single horse, which turned the machine. A tolerable mechanic, improving on the idea, would produce a much more powerful cutter than any yet invented.

FLANDERS.—*Lille.*—Many waggons loaded with chalk stones, &c. with the principal part of the load laid on the hind wheels, and a very small portion on the fore ones; a good sense that reproaches our barbarians in England.

ARTOIS.—The short scythe which they use through this province, and all over Flanders, is one of the most useful implements that can be seen: they call it the *pique*: it is much like the representation given by Mr. Walker in the Annals of Agriculture; only the handle here is much shorter: a man cuts an arpent a day in general with it, and sometimes more; he cuts and rolls into bottes an arpent of vetches (called here, mixed with oats, *dravin*); and he cuts an arpent of any sort of white corn, others following to bind with straw bands, made at home. This is a most æconomical system. The short handle of the pique is made to rest against the elbow; he holds it with the right hand only, or rather hand and arm; and in his left he has a stick, with a hook at the end of it, with which he draws or holds the corn in the right position to receive the stroke. They use scythes and cradles also for some works.

St. Omer.—That the pique is much easier to work than a scythe, appears from women and even girls cutting stout crops of tares with it. They give 45s. per measure of oats for cutting, with the pique, and a man does three-fourths per day.

NORMANDIE.—*Harfleur.*—I noticed here, what I may have often passed, perhaps, without seeing it, a pierced roller behind, and before a cart, which turns in the frame, or in the ladders, by which means a load is corded with a small hand-spike, almost in a moment; I have known something like it in the ladders of carts in England, but forget where; here they let down a cart behind, by raising the shafts in the air, set it against a cask, and wind the cask on to the cart, by means of the fore-roller, easily and commodiously.

Avranches.—Sea-sand is drawn in this country in carts, by a horse in the shafts, and another to lead, with two or three oxen between, and all in a line. About Carentan they attach the rope, by which they draw, to the yokes of the oxen, consequently the horse draws them down to the line of his own draught; and their rope to the top of the pole between the two thillers (when there are two), consequently all draw the thill-horses down. A team of five, thus harnessed, does not draw more than from 20 to 24 bushels of sea-sand; the horses are, however, poor small things; and no wonder, from the number of miserable

garran (poney) stallions that infest every stable you enter. The oxen are better, but none large.

BRETAGNE.—*Varades*.—They are now working their ridges, of three and four feet across, with a great timber triangular machine, drawn by oxen, to answer the treble purposes of harrowing, rolling, and levelling.

ISLE DE FRANCE.—BRIE.—*Nangis*.—Wheel-ploughs, and very good, except singly the breadth, which is 16 or 18 inches, and in narrow lands loses a fourth; it only wants to be taken in narrower, and left with the share projecting more from the throat.

CHAMPAGNE.—*Mareuil*.—Bad turn-wrest ploughs; but have the Brie one, which they prefer when there are root weeds to cut.

Rheims.—Very light ploughs, with a broad share, and one earth-board, but ill set on; it has wheels on the beam, which is little more than a stick. Women are ploughing.

To Chalons.—Many rollers every where; an implement very uncommon in France.

St. Menebould to Verdun.—Wheel-ploughs that are not turn-wrests, with well turned mould-boards. This is among the best ploughs I have seen in France.

LORRAINE.—*Mars-la-Tour to Metz*.—Broad share and good, but too wide at the heel; wheels.

Pont-à-Mousson to Nancy.—Here, for the first time, I met with waggons of a peculiar structure, the fore wheels are within four inches as high as the hind ones, and are high enough to enable one horse, for none are drawn by more, to convey 800 lb. to 1000 lb. Ploughs so wide at the heel, that they are drawn by eight horses.

ALSACE.—All through the part of Alsace, which I have seen, they use ploughs with low wheels; the share round and broad, and as wide on the land side as on that of the furrow, which is very erroneous, for they are not turn-wrests, but with fixed breasts, turning the furrow to the left.

BOURBONNOIS.—*Moulins*.—The common plough a turn-wrest one; but they have another for stirring, called *areou*, without an earth-board.

AUVERGNE.—*Iffoire*.—The plough only opens a slight furrow, into which the earth falls again, and buries nothing, and without a hot sun would kill nothing; the share a chissel point, one inch wide at one end, and three inches at the other end for stoney land, or for that which is free, turning it occasionally end for end. An earth-board on each side, but not more than four inches high.

Upon the implements in general, I may observe, that they will in all countries be proportioned to the wealth of the farmers. There is nothing in the kingdom comparable to those which we see in every part of England, where the implements of husbandry are carried to a perfection of which one sees nothing in

in any other country that I have viewed. The right form and powers of all instruments, used in agriculture, depending very much on the application of mechanical principles, were proper objects for the attention of those scientific men that compose academies; I do not know, however, that they have done any thing in this respect in agriculture, though such great exertions have been made in manufactures and ship-building. At one period, the ingenuity of mechanical genius in France was employed on agricultural tools; and then, as an ill star would govern, nothing was thought of but drill-ploughs and horse-hoes. Fortunately all invented were absolutely good for nothing, which threw such a discouragement on the practice, that the folly was but of short duration; had they been better it would have lasted longer, and would have done so much the more mischief; for the drill husbandry, at its best efforts, is fitter to amuse very ingenious gentlemen, who aim at great products without attending to expences, than to become the steady staple practice of a kingdom, in the hands of men who cannot easily understand refinements; and if they could understand, could much less afford them. Adopting beneficial courses of crops, that will allow a great increase of cattle and sheep; draining, irrigating, manuring; such objects are applicable to common farmers, little and great; but the refinement of drilling, applicable but to certain crops and certain soils, is not adapted to the mass of husbandmen, by whose more plain exertions mankind must be content to be fed.

C H A P. XIX.

Of Manures and Manuring in France.

PICARDIE.—**T**HROUGHOUT this province, most of the way from Calais to Clermont, the dung is now (May) carried out and ploughed in upon the fallows; it is in a long strawy state, and not one-fifth part rotten; nor half of it ploughed in.

PAYS DE BEAUCE.—*Toury*.—Many pits of white marl in this rich plain of Beauce, quite to Orleans; the fine loam four or five feet deep on it. They spread it on their lands, but the quantity very small; nor did I see any signs of old pits.

SOLOGNE.—*La Motte Beuvron*.—The rye-stubbles are (May) collected in heaps on the land, having been left so all winter, to prepare it for rotting for manure. Surely they might find a better way of doing it; housing their sheep, as they do, at noon as well as night.

LIMOUSIN.

LIMOUSIN.—*Usarch.*—Collect leaves to make manure with.

LANGUEDOC.—*Nismes to Quissac.*—In cultivating wastes, or old neglected pieces, they pare and burn; also collect turfs and clods in heaps, on faggots of box-wood, which they burn.

Lann-Maison to Bagneré de Bigorre.—Cut from their wastes, much fern, which they spread on their cultivated lands, and, setting fire to it, find the ashes equal to a dunging. They also cart much to their stables and farm-yards, to make dung with.

GASCOGNE.—*St. Palais to Anspan.*—Pass three or four lime-kilns, which, my guide assures me, are employed in burning for manure, to improve the wastes that abound so much in this country; and I saw several heaps near houses, without any signs of building going forward.

A general practice through these mountains, and almost to Bayonne, is that of manuring for *raves*, with the ashes of burnt straw. I observed several fields quite black; and, demanding what it was, my guide told me of this common practice here; afterwards I saw them strewing straw thickly over land, part of which had been already burnt on. They do this on a wheat-stubble; but not thinking that stubble enough is left, they add much wheat-straw, and, setting fire to it, burn the weeds as well as the straw, and clean as well as manure the land. With such quantities of fern on all their extensive wastes, I asked why they did not burn that, and keep their straw? The reply was, that fern makes much better dung than straw, so they burn the straw in preference. As soon as the operation is over, they plough the land, and harrow in rave seed. One large field, thus treated, I saw ploughing for that crop. They both hoe and hand-weed the raves, and have them sometimes very large; many as big as a man's head. Use them for oxen.

Fleurange to Leitoure.—Chop their stubbles exactly as in Suffolk, driving it on with their foot: they gather it for making manure.

TOURAIN.—*St. Maure.*—Here we found a greater exertion in husbandry than is commonly found in France, that of marling. We saw several large heaps of white marl, and at one of them four or five carts at work, each with three horses. It is found almost every where under the country, at the depth of three to five feet; the soil on which they lay it, is a good loam; adhesive, but not clay. They draw it up by buckets, which is a singular practice for such slight depths. The marl is in some pits white, in others yellowish, which is reckoned the best; it is very soft and fat to the touch. They spread twelve cart loads per arpent, of 100 *chainé*, each 25 feet square, 62,500 feet, or more than an acre and half; and it lasts good about 24 years. The landlords, on leases of nine years, pay the digging, and the tenants the carting. Of the yellowish sort they do not spread quite so much as the white. The same account was given at Montbazou;

Montbazou ; they spread it on the fallows, after two ploughings ; and, having ploughed in the marl, manure it with dung, and sow wheat. Make composts also of marl and dung mixed.

Orleans to Petiviers.—Under the greater part of this country there is a bed of imperfect marl, which is over the calcareous stone of which the roads are made. The farmers spread this marl on their lands, at the rate of 10 *tombreaux* per arpent, which lasts twelve years ; some, better than the rest, has been known to last thirty years.

ISLE DE FRANCE.—*Liancourt.*—Within two leagues of Liancourt, there is a navigation from Paris, but no idea, in any part of the country, of bringing manures ; no wonder ; for they carry flour thither by land carriage ; even the millers, who send it regularly, do the same.

SOISSONNOIS.—*La Fere.*—A vast excavation made in a hill, by digging and burning peat for manure : great heaps of the ashes now here. The price the farmers give is 22*s.* per measure, that holds 60 lb. of wheat, fifteen of which they spread upon an arpent. The effect is very great on all kinds of plants. This peat is unlike any I have seen, resembling an imperfect coal ; and the being found, not on a plain, but on hills, for I saw several, and all equally on elevations, distinguish it remarkably from the peats of England. The mine of this hill is nearly exhausted, as the common red loam of the country now appears nearly all around it.

FLANDERS.—*Lille.*—See many loads of urine and night-soil carrying into the country, by the farmers, for manuring their lands with. It is loaded in casks : each waggon carries 10 *tonneaux*, of about half a hoghead English. They lay from sixteen to twenty upon a *quartier* of land, at the expence of 7 liv. : use it for cole-seed, wheat, flax, &c. and find it equally excellent for all sorts of crops.

Armentieres to Montcassel.—Holes are dug in the sides and corners of many fields, for receiving the urine and night-soil, which is brought from every town, in casks, and kept against the season when it is wanted. Some have small roofs built over, to exclude the sun, wind, and rain ; and others covered with straw. The most correct and never-ceasing attention with which they procure and use this manure, deserves the greatest commendation.

To Berg.—A good deal of land chalked as well as dunged, and ready for wheat. The chalk is in large hard lumps, but broken and spread most curiously ; more evenly than ever I beheld any thing similar in England ; where the rough and unequal manner in which marl is rather tumbled than spread over the ground, is a reproach even to our best farmers, who permit those labourers, whose families are supported by poor-rates, to execute their work in that manner, to earn ten shillings a week instead of eight.

NORMANDIE.

NORMANDIE.—Throughout the part of this province which I have seen, they gather their wheat-stubbles, and even bundle it in sheaves : they chop it with an instrument something like a crooked scythe, fixed at the end of a handle of six or seven feet long ; but do it much slower than in England, with a common scythe.

Isigny.—Here, for the first time in France, I saw composts of dung and earth made.

Carentan.—Use sea-sand for manuring their pastures, spreading twenty loads per *vergé*, each load twelve to sixteen English bushels. The *vergé* equals 96 English perches. Mix it also with dung.

To Coutances.—Manuring with sea-sand continues hither.

Avranches.—And hither ; they have banked out half the river, which is a small arm of the sea, in order to build a bridge ; and the countrymen are digging out the blue sea-mud, and carrying it away to considerable distances.

BRETAGNE.—*Dol to Combourg.*—Wheat-stubbles gathered carefully ; and a great deal of fern cut now (September 1), and in heaps.

Hédé.—From entering Bretagne, paring and burning every where practised, but the heaps too large and too much burnt.

Rennes.—The farmers and gardeners buy the town dung, at 4 liv. the load.

Belle-Isle to Morlaix.—The rough land of this country is reckoned to find fuel and manure ; one of the reasons for almost the whole of it being in such a rough savage state. They have an execrable custom, well adapted to perpetuate their deserts, that of burning parts for ashes, to carry to their good land.

Morlaix.—Heaps of shell sand on lays, ready to spread for sowing wheat ; the same husbandry is practised on our opposite coast, in Cornwall.

To Brest.—A most excellent custom, of going round all the inclosures with an instrument between a scythe and a wood-hook, for cutting up all grass, weeds, and rubbish, on the banks and in the ditches, leaving them in heaps, and then carting them away for making litter and dung ; a practice that cannot be too much commended.

Chateaulin.—Paring and burning, the origin of all the culture there is in Bretagne ; and the ruin of the province at the same time. They pare 2½ and 3 inches deep ; and having exhausted the ashes by three or four crops, leave it to weeds for twenty years before it is fit to burn again.

Quimperlay.—There is here a most singular husbandry, of which I never saw any traces before. It is to pare the rough land, and not to burn, but to pile it up in heaps regularly square, of about 25 or 30 cubical yards in each, and about four of them to an acre ; they are squared up very neatly, and then the field is left for some time, to cover itself with a new herbage, which is free from furze and broom, but not quite so from fern ; after a time, the heaps being rotten, they
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are carted and spread, and the land cultivated. Sometimes they cultivate the land before they are spread, as I saw some in pieces of buckwheat. Paring and burning is also practised. This method is inferior to burning; it does not equally destroy grubs, vermin, and weeds; and the double carting is a considerable expence.

Vannes.—These heaps formed in the spring, and many will be spread this year for rye. Here they consist of three-fourths or seven-eighths of turf, pared off from every hole and corner from commons and bad fields, and carried to the good ones; and if this execrable practice is of any antiquity, it will account for the barren and wretched state of the country. Every poor field is made good for nothing, and the good one cropped, in consequence, till it is almost as bad. These heaps continue about Vannes in amazing quantities.

ANJOU.—Migniame.—The common manuring, ten loads of dung, each 3000 lb.; but not more than four of Angers dung, night-soil, ashes, &c.

MAINE.—Le Mans.—Marl is here used; 100 pipes are laid on a journal.

NORMANDIE.—Alençon.—Fallows all dunged, with square lumps of dung, quite black, as if cast in a mould; and very thinly; not more than six or seven loads an acre.

Lessiniolle.—Marl employed here; or rather a hardish imperfect chalk-stone; drawn up in buckets; it lasts twenty years. Stubbles cut close and botted.

Bernay to Elbœuf.—Marl.

Rouen.—Monf. Scannegatty, Professor of Physicks in the Royal Society of Agriculture here, having observed, that, in calcining gypsum, it was apt, for various uses, to be unequally burnt, part being partially reduced to lime, and the rest not sufficiently calcined, invented a furnace for the more equal distribution of the heat; a vault pierced for the fuel, with a long channel beneath, for conveying air, and a door to the mouth of the furnace; at top, various holes, by way of chimnies, for the smoak to issue, and which he closes alternately. He knows when the gypsum is sufficiently calcined, by applying a cold bright iron to these holes; it is insufficiently done while any humidity rises.

La Roche Guyon.—Elm leaves are found to make good dung, but not oak ones; the latter take three years to rot sufficiently.

ISLE DE FRANCE.—Nangis.—There are afs-men, who take marling to do for the farmers, at 18 liv. per arpent (to English acre as 32 to 38). Monf. De Guerchy, after water in a pond, nine crops of oats, and all good.

To Meaux.—Long dung spread and spreading now (July 2), for wheat next year.

Neuf Moutier.—Manure their rich clays with the white marl found under them; which has the appearance of consolidated paste. They fallow for wheat, and manure the fallows in June, with long dung almost in the state of straw; a method

thod they contend warmly for; thinking, that a greater degree of putrefaction would be loss of quantity and virtue. But there is a circumstance which seems in fact much to condemn this method; it is, that while the wheat crops are to be ranked amongst the finest in France, and would indeed make a capital figure in England, the oats and barley are wretched, indeed (soil considered) below contempt. Does not this seem to prove, that the exposition of the manure, through the year of fallow, to the sun, exhausts it to the amount of the benefit which one crop would receive from it, and that the wheat has it at second hand, and the spring corn at the third.

ALSACE.—*Strasbourg*.—Gypsum used as a manure for clover with success; does best on clayey lands; there are mills for pounding it. It is said to last good for some time; 2 or 3 boisseau, of 30 lb. wheat per arpent of 24,000 feet (between two and three bushels per English acre). If a quantity is used, it spoils the land. What mysteries are these about this manure!

Befort.—Manure with blue marl.

To Isle.—The dunghills here are the neatest spectacles I have any where seen; the walls of them are twisted bands of straw, close and regular as a bee-hive, and some are covered at top with leaves and branches of trees to exclude the sun. Admirable! Deserving universal imitation.

DAUPHINE.—*Loriol*.—Box, in this country, is cut on the mountains for manuring vines, by burying it fresh at their roots. For mulberries also it is excellent. Three trees were planted at the same time, and in the same soil, one with box, and the others without, and there is now no comparison between them.

M. Faujas de St. Fond has tried gypsum, on a large scale, on sandy land, for sainfoin, with great success.

PROVENCE.—*Salon to St. Canat*.—Dead olive branches and cuttings, are piled up with clods and rubbish for burning, as in Catalonia.

Tour d'Aigues.—Paring and burning is practised every where; and, as in Ireland, in corners, holes, wastes, and even ditches, to make heaps of manure for their cultivated lands. They are now (September) burning every where. The common opinion is very much against it; but the President remarks, that it has been practised here uninterruptedly, probably, for 2000 years, yet the land is no worse than it has always been.

The importance of manuring is well understood in many of the French provinces; where faults are to be found, it is more for exhausting the benefit as fast as possible, than for want of knowing the operation and effect. The best farmers in England spread manures for ameliorating crops, in order that the hoe or the scythe may cut off the weeds that are apt to rise in consequence; and as such crops support cattle, the more manure is spread the more manure is made; it is

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in arithmetical progression: on the contrary, when it is given for exhausting crops, as wheat or rye, the benefit is soon exhausted, and the increase, so valuable in the œconomy of a farm, does not take place. By means of spreading the dung for those crops that support cattle and sheep, the live stock of a farm may be always gradually increasing; and it is impossible they should increase, without the farm improving, and corn itself augmenting by the ratio of the product rising.

CHAP. XX.

An English Farm established in France.

AMONG the most interesting observations which the Duke of Liancourt had made, in the various visits he paid to England, was that of the superiority to which the industry of that kingdom was carried beyond the practice of France; and above all, to what a degree of perfection agriculture had attained, founded on experiment, and manifest in an infinitely greater production of corn and of live stock than is to be found in almost any other country, extent and quality of soil considered. Impressed with this fact, he had long cherished the hope of introducing into his own country this source of increasing wealth, flowing as well from the augmentation of produce, as from that of the people employed to raise it: but sensible, at the same time, that the most useful innovations could be introduced by example only—a truth the more applicable to agriculture, from being practised by men of small fortune, little or no education, and consequently full of prejudices, and unequal to the pursuit of any practice, but that of the *beaten track*,—he determined to attempt, as soon as it was in his power, an essay of English agriculture; but as he was desirous of having his example followed, it was necessary that these essays should be so conducted as to ensure success.

His friend, Mons. de Lazowski's residence during three years, in England, whither he consented to accompany the sons of the Duke, facilitated these means. Mons. de Lazowski, who I had the pleasure of knowing intimately, acquired that knowledge in agriculture, which much inquiry, assiduous application, and frequent conversations with the best farmers, could give to a mind very capable of, and much accustomed to observation: he was likewise no

stranger to the projects of Mons. de Liancourt; and in this instance, as on every occasion, his unexampled friendship made him eager to second his views.

In 1789, Mons. de Liancourt, on becoming the proprietor of a large estate, situated at thirteen leagues from Paris, resolved immediately to execute the plan he had so long projected: he accordingly engaged an English farmer to come over from Suffolk, with his family, and a common labourer; this English colony carried with it every kind of farming implement; they had with them likewise five oxen, a bull, and five cows, from Suffex, to perpetuate that breed, if the country into which they were transported would admit of it; to these were added a Suffolk polled bull and five cows.

The farmer was placed in a farm that had hitherto yielded about two hundred pounds a year; the land was in some parts good, in others bad; it was so divided in quality and in situation, as to render one part fit for the reception of sheep, and the other part for the feeding of cattle; these two objects were those which Mons. de Liancourt was most anxious to attain, in the agricultural system he was about to introduce; because they were most advantageous, in a country surrounded by great markets, and very near to that of Paris; he added a large extent of land to the farm, taken from his park, and from other farms, consisting of about eight hundred arpents; two hundred and fifty of which were appropriated to sheep, and the rest to the feeding of cattle; he designed to have made such additions to each part, as would have enlarged the whole to fifteen hundred arpents; to which, in process of time, he would have nearly dedicated the whole of his park. Whilst the Englishmen were beginning their operations, and forming the labourers of the country to the use of the new sort of plough imported from England, instructing the common workmen as to the construction of the new implements, and teaching the women servants of the farm the management of the dairy, the making of cheese, &c. Mons. de Liancourt had sent two young labourers, out of the environs of Liancourt, to England, who, being placed by me with good farmers in my neighbourhood, qualified themselves to replace, at a future day, the English family, in case these should grow tired of living in France, or to assist them if, as Mons. de Liancourt hoped, they were disposed to remain. The artizans of Liancourt learnt to imitate the implements, the plough and the cart brought from England, and made them very well.

To the cows, from England, were added twenty-four more from Normandy and Switzerland; the whole herd, a very fine one, amounted, in 1792, to a hundred and five head, and hopes were entertained of increasing the number to three hundred, and of supplying them completely with a sufficiency of food. The young beasts were not then of an age to allow of any decision being

being made, whether the produce of the Suffolk or of the Suffex breed would best succeed, but the whole afforded the most flattering hopes.

With regard to the flock of sheep—the Spanish ram crossed with the ewes of Berry and the Spanish ewes, and the Berry ram with the Flemish ewes, were the two breeds designed to be established and improved; an English ram from Romney Marsh was also crossed with the Berry ewes, all of which answered perfectly well: the lambs were fine, but as this branch of business had been begun later than the other, the prospect of its success, although well founded, could not be entirely ascertained.

The lands had been put into excellent condition, in a country where inclosures were unknown; every field of the farm was inclosed by deep and broad ditches, with well planted hedges; gates were erected in all; the dry lands were irrigated, and the marshy meadows drained, by cuts underground; old lands, for ages past, judged incapable of yielding any produce, were burnt and rendered fruitful; the buildings on the farm were modelled to the new system, and to the management of the culture that was introduced. The two young French labourers were returned from England, and the English farmer (Mr. Reeve), an excellent one, and a very honest man, satisfied with his situation, with his success, and with the treatment he met in the country, thought only of continuing his employment, of increasing his success, and of seconding the intentions of his master. He was ordered to keep an exact and daily register of all the business transacted on the farm, to shew it to whoever chose to see it, and to answer all their questions with truth, mildness, and patience, but not to intice any person to undertake an imitation of the English method of farming; Mons. de Liancourt thinking, that in every innovation, nothing less than self-conviction ought to actuate those who attempt it; and that by raising their expectations too highly they risk the success, which sooner or later would not fail to attend their efforts. The cows of the district were covered by the bulls of the farm whenever they were brought, and the produce from them was already found, by the people of the country, to be much finer; the culture of turnips and of cabbages, for the feed of cattle, absolutely unknown before in the district, began to be introduced; some proprietors inclosed their fields; several others had made, for their own use, farming implements after the English model, and found them answer best the purpose; many more hands were employed, of all ages and of both sexes, in the farms; the English were received with pleasure in the country, and treated in the most cordial manner; every thing succeeded to the utmost wish, and these successes were, in great measure, due to the indefatigable and enlightened vigilance of Mons. de Lazowski, whose heart is equal to his capacity.

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The events of the 10th of August added the cruel necessity of forcing Mons. de Liancourt to renounce the hope of being useful to his country, as he had every reason to expect from these essays, to the other misfortunes he has experienced from the same cause.

Agriculture was not the only object of improvement he sought to transport out of England into his country; he had likewise began to establish the spinning of cotton, a manufactory of linen, a stocking manufactory, and the fabrication of cards; he had engaged the different artisans in each branch from England, constructed buildings, and sacrificed his gardens to these various establishments; which, in 1792, already employed more than a thousand people in the district of Liancourt; and, although yet far from having attained to perfection, they were productive of the most salutary effects to the lower ranks of people. As these manufactures have remained in the possession of an Irishman, whom he had taken as an associate, Mons. de Liancourt consoles himself with the idea, that the considerable sums of money it cost him to form these establishments, were ^{not} wholly lost to the country he was so anxious to enliven and to enrich by industry. These establishments naturally recall to mind what the Marquis de Mirabeau, in his book *De l'Ami des Hommes*, relates of the Duke de la Rochefoucauld, the grandfather of Mons. de Liancourt, having, in 1754, made a sacrifice of one of the finest orangeries in France, and part of his park, to the inhabitants on his estate at Verteuil, in Angoumois, for the purpose of planting mulberry-trees, and raising of silk-worms, the cultivation of which was at that time scarcely known at Verteuil. This benevolent man had, before his death, the consolation of seeing many good intentions crowned with success; Mons. de Liancourt, on the contrary, has the sensible mortification of seeing the good he intended to do, and which he had so happily began, destroyed by those very people for whom it was undertaken; and who, by a fatal error, in thinking to hurt him, whose sole endeavours tended to their advantage, have hurt themselves, by destroying an establishment that would have been a germ of national prosperity, and was unique in France.

The destruction brought upon such establishments, by revolutionary anarchy, is one, among a thousand lessons that teach the danger, to the dearest interests of the people, flowing from popular commotions. Little more remains of these agricultural establishments, than the merit of having made them a source of heart-felt satisfaction to a worthy and patriotic individual. That he may be speedily reinstated in a property, which he lived only to improve and to adorn, is the sincere wish of that gratitude and friendship which pens this faint acknowledgement of merit.

I T A L Y.



NOTES

ON THE

AGRICULTURE OF LOMBARDY.

ONE of the most interesting countries in Europe, for the practice of various branches of rural œconomy, merits a much closer and more minute detail than is possible for a traveller to give, who, from the nature of his pursuit, can do no more than retain a few of the principal features, to point out those circumstances which demand the most studious attention: some of these are so valuable, that years would not be mispent in acquiring a complete knowledge of them. On every subject, except what respects directly practical husbandry, the small number of my inquiries is of less consequence, while the pen is in the hand of my esteemed friend, Mr. Professor Symonds, whose elegant memoirs upon Italian agriculture * are fraught with information of unquestionable utility. I shall arrange the minutes I made in Lombardy under four heads, which will include all that I think worthy of the reader's consideration.

- I. General circumstances of the husbandry.
- II. The management of grass lands.
- III. The management of arable lands.
- IV. The encouragement or depression which agriculture receives from various causes.

* Inserted in the *Annals of Agriculture*.

CHAP. I.

General Circumstances of the Husbandry of Lombardy.

LOMBARDY is one of the richest plains in the world; for fertility of soil, united with the use that is made of it by watering, it much exceeds every other in Europe; but for mere natural fertility, I take the plain which extends from Holland to Orleans to consist of a richer soil, and it is also of a greater extent. From the foot of the Alps, near Suza, to the mouths of the Po, are about two hundred and fifty miles; and the breadth of this noble plain varies from fifty to one hundred, containing, probably, about fifteen thousand square miles. The Po bends its stately course through the whole extent, its branches ramifying, in innumerable streams, from the Alps on one side, and from the Appenines on the other; the prodigious extent of the former range, covered with eternal snows, afford a vast supply of water; preserved most conveniently in those immense reservoirs the Lago Maggiore, Lugano, Como, Iseo, Guarda, whose waters are the origin of the greater part of the irrigations of Lombardy. But in the Appenines there are no such reservoirs, nor any extent of snow similar to that of the Alps. Thus the space watered to the north of the Po, is probably ten times more considerable than that to the south of the same river.

The soil of Lombardy is, wherever I viewed it, either sand, gravel, or loam. I met with none, or, at least, with very little clay (speaking always as a farmer, and not as a naturalist), and no chalk.

Under this head I shall insert the notes I took concerning—1, soil; 2, climate; 3, inclosures; 4, farms and tenantry; 5, rent and price of land.

SECT. I.—OF SOIL.

PIEDMONT.

After passing the Alps from Nice, and descending towards Coni, in the level and fertile vale of Piedmont, the soil is every where a rich sandy loam, with small appearance of clay. Wherever rivers, or rather torrents are found, we see great tracts of stone and shingle, which were brought by the water from the mountains. The Dora Baltia offers this spectacle; from that river to Ciglione, are plains and wastes of gravel. The rice country of Verceil is a sandy loam. The district of the Sesia is gravel. The Tesin is the same. The gravels of Piedmont are all full of round stones, from the size of an egg to that of twice a man's fist.

MILANESE.

MILANESE.

In the way from Milan to Pavia, great tracts of gravel, which would not be very valuable without water. To the north of the city, about Mozzata, &c. they have two soils chiefly,—a strong loam, a little clayey, blackish, and free from stones; and a gravel mixed with loam, some blackish, dries quickly, and always loose. The Lodizan is a loamy sand, or loamy gravel*.

STATE OF VENICE.

The whole way from Vaprio to Verona, there are very great tracts of gravelly loams; there are also some sandy ones; the soil naturally is not deep or rich, though there are tracts that merit both those epithets. The territory of Verona is, in general, indifferent, and would not be of great value, were it not for water, and much industry. The best meadows and rice-grounds are not more than nine inches deep on stone and gravel. For some miles from Verona, the stoney gravel continues; but towards Vicenza, much fine red and brown, deep, friable, sandy loam, with few or no stones.

ECCLESIASTICAL STATE—FERRARESE.

In the Ferrarese, between Passo Siene and Bologna, the soil is two feet deep; of a brown sandy loam, with a yellowish hue, under which is one foot of sand, and then blue clay, apparently ferruginous. In cutting, not long ago, through a field, for raising a bank, they met with a heap of antient bricks, five feet deep. From Ferrara to Bologna, the soil is, to all appearance, the richest I ever beheld; deep, friable, and with that degree of tenacity which marks great fertility: it seems to be entirely a deposition of waters, that have brought those fine particles which are held suspended, and which render that fluid turbid; those almost impalpable particles which are long in subsiding.

TUSCANY.

All I saw of this territory, is a rocky stone brash, or gravel. The loams are compounds of it, with more or less vegetable mould; I saw scarcely any tracts, large enough to be worth mentioning, that are exceptions. It is, upon the whole, though improveable, not a fertile soil; and, if olives were not well adapted to it, would be productive of little beside sheep-walk; to which ani-

* The Lodizan soil is termed, by the Italian writers, *oriola*; a blackish sand, mixed with clay. The Gera d'Adda of *geriva*, a gravel, composed of sand and reddish gravel, with a little clay. The Cremonese, a red ferruginous earth. Sand and gravel every where. *Atti di Milano*, tom. ii. p. 163.

mal, all I saw of this country, is admirably adapted, and would, I doubt not, produce as fine wool as Spain itself.

MODENA AND PARMA.

A rich sandy or gravelly loam is predominant through these dutchies; in many tracts it is deep, moist, and friable, as I saw in the lands which were receiving their autumnal preparation for beans in the spring. In some districts it is of a firm texture, but not clay. Much the same soil, but not equally deep, is found in the ceded provinces of Vogara, Tortona, and Alexandria; but parts of the last more tenacious, and to be ranked among the stiffest I met with in Lombardy.

SECT. II.—CLIMATE.

On the climate of Lombardy, Mr. Professor Symonds is so full and satisfactory, that the reader can be no where so well instructed.

PIEDMONT.

The great complaint in Piedmont, is the excessive heat in summer; equal, I was assured, to almost any that is felt on the globe, and of a suffocating quality; while the frosts of winter are as severe, in the contrary extreme. The pestiferous climate of Sardinia is known to every body; though between 39 and 41 degrees latitude, in the southern part of the island, they are not forwarder than in the Milanese: they cut their corn in the north part in July; in the Milanese before the end of June*.

MILANESE.

The most remarkable circumstance in the climate of the Milanese, is the mildness and warmth of northern and mountainous tracts, and the severity felt in the plain. This fact is found particularly around the lake of Como; upon all the western coast of that lake, which is about forty miles long, the *agrumi*, as the Italians call oranges, lemons, &c. are found, exposed to the open air, in good perfection; yet the whole of the lake is bounded by the high Alps, which, immediately to the north, are covered with eternal snows. On the rich plain of Milan, and thence to the Appenines, no such plant can be left exposed; olives are not seen, and oranges, lemons, and bergamots, must be covered in winter. These *agrumi* are found chiefly on the west coast of the lake, but some are scattered on the eastern. It is the shelter afforded by the mountains, in peculiar positions, that has this effect. The same circumstance is found in the Lago Maggiore, where the famous Borromean islands are covered with *agrumi*!

* *Rifiorimento della Sardegna*, tom. i. p. 155.

In all the Milanese, dry summers for corn. (I believe it is the same every where in Europe), are the most productive*.

In an experiment made at Vicenza, in the Venetian State, by the Accademia Agraria of this city, they sowed wheat October 18, 1787; came up the 28th; the ears appeared May 2, 1788; the flowers May 13; reaped June 19.

TUSCANY.

I was at Florence the beginning of November, and the ice was four inches thick; a severity never yet known in England. The English were, at the same time, skating at Rome.

One-fifth of all the productions of the earth are calculated to be destroyed by hail and other accidents.

PARMA.

In the management of the vines in the Parmazan, there is a practice, which shews the constant dread of severe frosts. All the vines are now (in November) turned down, and the end shoots buried † in the earth to preserve them; yet in a wet season they suffer by this treatment, as well as in all seasons, by being stripped from the trees, in order to undergo this operation.

Mr. Professor Symonds, in the excellent paper quoted above, removed the common erroneous idea of the fine climate of Italy: I made many inquiries con-

* The same remark was made long ago, in 1540;

MDXL Extructum

Annus hic bisextilis fuit et luminare majus

Fere totum eclypavit

A septimo idus Novembris ad septimum usque Aprilis idus

Nec nix nec aqua visa de coelo cadere

Attamen præter mortalium opinionem dei clementia

Et messis et vindemia multa.

It is extraordinary, that in 1779 there was an almost total eclipse of the sun, followed by a fine winter, the same as in 1540. There was a small eclipse on the 7th of April 1540, but an almost total one the 15th of April 1539, and which, for quantity and duration, was very much like that the 24th of June 1779. The crop was abundant, as it appears by the prices of the year, in the Ledger of the Cistercian Monks. Wheat, 1539, the moggia, 5 liv. In 1540, ditto, 4 liv. In 1541, ditto, 6 liv. The ducat of gold, or zecchin, then at 5 liv. 15s. Campi (*Istoria di Cremona, anno 1540*) speaks of the extraordinary dryness of this year, the abundance of crops, and subjoins, that the corn was cut the middle of May, and the vintage the beginning of August. This is the harvest near forty days sooner than at present, and the vintage two months. *Opusc. Scel. tom. ii. p. 136.*

† The same practice was known among the antients. See *Strabo*, lib. vii.; and *Quint. Curt.* lib. vii. c. 3.

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cerning the leading facts, and have every reason to believe that it is, in point of health and agreeableness, one of the worst climates in the world: with the views of a farmer, however, it must be confessed, that the productions which the whole peninsula owes to its climate are very valuable; to omit speaking of Sicily or Naples, I may remark, that planting the poor brashy hills of Tuscany with olives is an advantage unequalled by any thing to be met with in the north of Europe; that the produce of silk throughout Lombardy is an object of the first importance—That rice is found to be an article of almost unrivalled profit—That the productive state of the meadows is indebted almost as much to the heat of the summers, as to the plenty of water; and, for any thing I know to the contrary, the admirable quality of the cheese also. These are all objects of great magnitude, and entirely derived from climate.

SECT. III.—INCLOSURES.

PIEDMONT.

It is not very easy, in many parts of Piedmont, to pronounce, on a superficial view, whether the country be open or inclosed; but, on a nearer inspection, the greater part by far found to be inclosed; generally by ditches, and, in many districts, with hedges also; which, in some places, are as complete as in the best English counties.

MILANESE.

Much the greater part of this territory is inclosed, either with hedges or by ditches, which serve as conductors of the water used in irrigation. These, in the Lodizan, and other districts to the south of Milan, are planted so thickly, with willow and poplar pollards, that the country looks every where like a wood.

VENETIAN STATE.

Much of the country, from Bergamo to Brescia, is very thickly inclosed with hedges. From Brescia to the Lago di Garda it is the same; but from thence to Verona not equally so.

ECCLESIASTICAL STATE—BOLOGNA.

The whole Bolognese is inclosed. They make and plash their hedges with the nicest attention: made with dead stakes, about four feet high, and tied in cross lines, with great neatness and strength. This care is, however, exerted for the boundary of the farm only; subdivisions of this kind are rare.

TUSCANY.

TUSCANY.

There are no rights of commonage in all Tuscany; thanks to the wisdom of Leopold; every man has a right to inclose his property as he pleases. The Apennines, crossed from Bologna to Florence, are, however, mostly uninclosed, and almost waste.

MODENA.

From the city of Modena to Reggio, the inclosures are very neatly formed, of well made hedges without any ugly sprawling ones; but all either trimmed, or made so often, that they are not suffered to spread.

PARMA.

To Firenzuola all the country is inclosed.

PIEDMONT.—*Tortonese.*

The fences from the Duchy of Modena hither are greatly declined: there are some hedges every where; but many large fields all the way, with only bad ditches or banks.

Lombardy, upon the whole, must be considered as an inclosed country, and much of it closely so. It would indeed be a glaring absurdity to keep land so extremely valuable in an open state. The importance of inclosing is well understood, and where not practised in perfection, it arises from causes that form exceptions rather than affect the general rule.

SECT. IV.—OF FARMS AND TENANTRY.

The predominant feature in the farms of Piedmont is *metayers*, nearly upon the same system which I have described and condemned, in treating of the husbandry of France. The landlord commonly pays the taxes and repairs the buildings, and the tenant provides cattle, implements, and seed; they divide the produce. Wherever this system prevails, it may be taken for granted that a useless and miserable population is found. The poverty of the farmers is the origin of it; they cannot stock the farms, pay taxes, and rent in money, and, therefore, must divide the produce in order to divide the burthen. There is reason to believe that this was entirely the system in every part of Europe; it is gradually going out every where; and in Piedmont is giving way to great farms, whose occupiers pay a money rent. I was for sometime deceived in going from Nice to Turin, and believed that more of the farms were larger than

than is really the case, which resulted from many small ones being collected into one home-stead. That belonging to the Prince of Carignan, at Billia Bruna, has the appearance of being very considerable; but, on inquiry, I found it in the hands of seven families of metayers. In the mountains, from Nice to Racconis, however, they are small; but many properties, as in the mountains of France and Spain.

The Caval. de Capra, member of the Agrarian Society, assured me, that the union of farms was the ruin of Piedmont, and the effect of luxury; that the metayers were dismissed and driven away, and the fields every where depopulated. I demanded how the country came to have the appearance of immense cultivation, and looked rather like a garden than a farm, all the way from Coni? He replied, that I should see things otherwise in passing to Milan: that the rice culture was supported by great farms, and that large tracts of country were reduced to a desert. Are they then uncultivated? No; they are very well cultivated; but the people all gone, or become miserable. We hear the same story in every country that is improving: while the produce is eaten up by a superfluity of idle hands, there is population on the spot; but it is useless population: the improvement banishes these drones to towns, where they become useful in trade and manufactures, and yield a market to that land, to which they were before only a burthen. No country can be really flourishing unless this take place; nor can there be any where a flourishing and wealthy race of farmers, able to give money rents, but by the destruction of metaying. Does any one imagine that England would be more rich and more populous if her farmers were turned into metayers? Ridiculous. The intendant of Bissatti added another argument against great farms; namely, that of their being laid to grass more than small ones; surely this is a leading circumstance in their favour; for grass is the last and greatest improvement of Piedmont; and that arrangement of the soil which occasions most to be in grass, is the most beneficial. Their meadows are amongst the finest and most productive in the world. What is their arable? It yields crops of five or six times the seed only. To change such arable to such grass, is, doubtless, the highest degree of improvement. View France and her metayers—View England and her farmers; and then draw your conclusions.

THE MILANESE.

Wherever the country (that I saw) is poor and unwatered, in the Milanese, it is in the hands of metayers. At Mozzata the Count de Castiglioni shewed me the rent book his *intendant* (steward) keeps, and it is a curious explanation of the system which prevails. In some hundred pages I saw very few names without a large balance of debt due to him, and brought from the book of the preceding year:

year: they pay by so many moggii of all the different grains, at the price of the year: so many heads of poultry; so much labour; so much hay; and so much straw, &c. But there is, in most of their accounts, on the debtor's side, a variety of articles, beside those of regular rent: so much corn, of all sorts, borrowed of the landlord, for feed or food, when the poor man has none: the same thing is common in France, wherever metaying takes place. All this proves the extreme poverty, and even misery, of these little farmers; and shews, that their condition is more wretched than that of a day labourer. They are much too numerous; three being calculated to live on one hundred pertichi, and all fully employed by labouring, and cropping the land incessantly with the spade, for a produce unequal to the payment of any thing to the landlord, after feeding themselves and their cattle as they ought to be fed; hence the universal distress of the country. Those who are advocates for small farms, should come hither, and see how they infallibly generate poverty in every cottage. The surplus of population is not demanded by manufactures, or by towns; the increase, therefore, is only the division of a pittance of food amongst many mouths instead of a few. It is impossible to prohibit procreation, or to force emigration; but it is in a landlord's power to introduce, gradually and prudently, a different system—to occupy a large farm himself, cultivated accurately, by day-labourers, of all ages and sexes, well paid; and, if this be not sufficient, to establish a manufacture of some gross and simple kind, to employ the population already existing; and, by a gradual alteration in his farms, to proportion the food to the mouths that are to eat it*. There is at present an inducement to such a change, that ought to weigh very seriously: the example of the French revolution will spread, and will be much more apt to take effect in countries where there is nothing but the great land owner and the poor cottager, than in others where there are intermediate ranks of men of substance, who have an interest in preserving public order. What a temptation to confusion and rebellion is it, to have a country full of miserable metayers, all deeply indebted to the seigneur? Nine-tenths of the people, in such a case, have an immediate interest in burning his castle and his account-books, for he stands single, on one hand, against all the people, swarming on the other; but in the watered plain, where the farms are large and not populous, from so much being in grass, there is every where a race of wealthy farmers, who have an interest in keeping the people quiet,—who are united with the landlord,—and who, paying their men in money, without these long and dangerous accounts, have not the temptation to revolt; or even if they were tempted, they would not have the disproportion of numbers to render it equally dangerous. The great object of men who have

* But instead of the number of farms decreasing, they are increased, as we learn from Sig. Lavizari, *annot. sul Mitterpacher*, tom. i. p. 221.

property, is at present to secure it—and they can have no security, while they fill the country, by metaying, with swarms of a starving and indebted peasantry. It should be remembered, that the mischievous confusions, plundering, and burnings, in France, were not in the Pays de Beauce, nor in Picardie, nor in Artois, where metayers are unknown, and the farms large; but in the Maçonnais, in Bresse, in Sologne, where all are in the hands of poor miserable metayers; an instance, surely, express to the purpose; and which should have its weight with Italian landlords. But to work a change in this pernicious system, demands a residence on their estates in the country, instead of abandoning them to the rapacity of stewards; it is not by living in the frippery of great cities, that their landed property is to be arranged on safe principles *.

In the watered part of the Milanese, great and rich farmers are found. Here are the particulars of a farm, I viewed, between Milan and Pavia; viz. 3100 *pertichi*; 1600 of rice; 200 flax; 450 perennial grass; 450 clover; 400 arable crops, wheat, rye, maiz, millet, oats, &c.; 12 horses; 8 oxen; 55 cows; 2 bulls; 40 labourers; rent 20 liv. the *pertica*; the whole capable of being watered. And at Codogno the following are the particulars of one, where 100 cows are kept: 2000 *pertichi*; 100 cows; 1 *cazaro*; 1 *fotte cazaro*; 6 others; 9 for corn; 1 agent; 1 guard against thieves, and those who steal water; 1 waterman. To stock such a farm 50,000 liv. necessary. By means of such farms they have rich farmers; some worth 100,000 liv. The general idea of profit, in these dairy districts, is 10 to 15 per cent.; some dairy farms are occupied by proprietors, but the number is inconsiderable.

VENETIAN STATE.

All the lands in the Brescian and Veronese territory are let at half produce, *à la meta*; even vines: but some meadows are usually reserved, and also woods. The proprietor pays the land-tax, and the farmer provides live stock, and pays the taxes on it.

Sig. Locatelli has a farm of 100 *campi*, within two miles of the city, which yields him 250 *zecchini* nett; this is something more than 30s. an acre. He has also another farm, more distant, of 600 *campi*, which yields 650 *zecchini* nett; on which there are 8 cows, 22 oxen, and 150 sheep.

In the Vicentine †, rent, when calculated in money, 2½ *zecchini* per *campo*. They have farms so large as 2000 *campi*.

* This whole passage is left as originally written; before French horrors rendered French politics objects of detestation rather than example.

† Particulars of a farm of 120 *campi*: 20 of meadow, not watered; 90 of corn; 10 of clover; 15 oxen and young cattle; 3 cows; 2 horses; 4 hogs; 7 men; 4 ditto, with oxen; 4 women; 2 children.

In the Paduan, 100 campi are a large farm; common 60; small 40; and they reckon small ones the best cultivated; if this be fact, and not a matter of opinion in the gentleman, my informant, it shews that their husbandry must certainly be esteemed bad; it is, however, questionable, for the reason added was, that there were more people on small farms; a sure proof that the progress of improvement has not been carried far. To stock a farm, of a hundred campi, 1000 ducats are necessary, reckoning the ducat at 3s. which is not exact; this is a poor stock, for it does not exceed 33s. the English acre. The arrangement of the farms, in the Paduan, may be guessed at, in some measure, from the following particulars; there are found, in the whole district, 288,300 souls; 49,943 cows and fatting cattle; 41,000 plough oxen; 102,000 sheep; 16,598 hogs; 731 mules; 2381 asses. One Professor informed me, that, in his opinion, the great mischief of the country is, that of great land proprietors letting their estates to undertakers or middle-men, who will hire to the amount of 10,000 ducats a year; and, in re-letting to farmers will squeeze them so, that they cannot live, to the great degradation of the country. Another Professor said, that the district of Padua is not so well cultivated as the Vicentin, by reason of the greater poverty of the farmers and peasants, who are miserable, and have no power to make the land yield well. Indeed I learned, from very good authority, that the Paduan is not equal to the Vicentin, except in the mountains, where the peasants are much more at their ease than in the plain.

ECCLESIASTICAL STATE—BOLOGNA.

Estates here are very generally let to middle-men, who re-let them to the farmers at half produce, by which means the proprietor receives little more than one-half of what he might do on a better system, with a peasantry in a better situation. The whole country is at half produce; the farmer supplies implements, cattle, and sheep, and half the feed; the proprietor repairs. Silk, and even wine on the same tenure.

Particulars of a farm (Sig. Bignami's) of 600 tornature; 360 on the hills; the rest on the plain: 6 metayers; 36 working oxen; 12 cows; 20 young cattle; 100 sheep. Produce, 2000 corbi of wine; 3 to 400 corbi wheat.

TUSCANY.

Letting lands, at money rent, is but new in Tuscany; and it is strange to say, that Sig. Paoletti, a very practical writer, declares against it*. A farm in Tuscany is called a *podere*: and such a number of them as are placed under the management of a factor, is called *fattoria*. His business is to see that the lands

* *Penfieri*, &c. p. 162. 164.

are managed according to the lease, and that the landlord has his fair half. These farms are not often larger than for a pair of oxen, and eight to twelve people in one house; some 100 pertichi (this measure is to the acre, as about 25 to 38), and two pair of oxen, with twenty people. I was assured that these metayers are (especially near Florence) much at their ease; that on holydays they are dressed remarkably well, and not without objects of luxury, as silver, gold, and silk; and live well, on plenty of bread, wine, and legumes. In some instances this may possibly be the case, but the general fact is contrary. It is absurd to think that metayers, upon such a farm as is cultivated by a pair of oxen, can be at their ease; and a clear proof of their poverty is this, that the landlord, who provides half the live stock, is often obliged to lend the peasant money to enable him to procure his half; but they hire farms with very little money, which is the old story of France, &c.; and indeed poverty and miserable agriculture are the sure attendants upon this way of letting land. The metayers, not in the vicinity of the city, are so poor, that landlords even lend them corn to eat: their food is black bread, made of a mixture with vetches; and their drink is very little wine, mixed with water, and called *aquarolle*; meat on Sundays only; their dress very ordinary. Yet in all these particulars they were in a worse situation before the free corn trade. The richest peasants are in the Valdichiano. The most common agreement is, for the landlord to furnish all the cattle and sheep, and to pay the taxes, except the capitation on the peasants family of 3 liv. for all above three years old. In a considerable *fattoria* of 18 poderi, at Castello Villa Bali Martelli, the largest is of 200 stiori (36 acres, at $5\frac{1}{2}$; $28\frac{1}{2}$, at 7), and 70 the smallest. Particulars of one of 190 stiori: 1 pair of oxen; 2 calves; 1 horse; 1 mule; no cows, sheep, or hogs; 14 people, of all ages and sexes; taxes, before the grand Duke's redemption, 80 pauls, now 15; tithes 15 pauls, half paid by landlord, half by peasant; this is 6s. 8d. in the whole for about 30 acres. Produce corn, 180 scudi; silk, $6\frac{1}{2}$; wine, 58; oil, 60; in all 85l.; the half, or 44l. is the landlord's receipt for these articles, or above 1l. 5s. per acre, at $5\frac{1}{2}$ stiori to the English acre, and 1l. 11s. if at 7. No small proprietor.

Villamagna.

Sig. Paoletti, rector of this parish, and author of some valuable works on agriculture, which I have had occasion to quote, was so obliging as to give the following detail of the 3 poderi belonging to his living, from which the arable œconomy of this part of Tuscany will be well understood.

Three Poderi; three Families.

Seed sown.—48 staji of wheat	—	168 stiori of land.
3 ditto vetches	—	7½
24 ditto beans	—	28
6 ditto oats	—	10
Artificial grasses; viz. clover, great millet, vetch, and oats, all for forage	- - -	24
Wood,	- - -	283

The stajo of wheat, of 40 lb. English (52 lb. to 55 lb. Tuscan), sows 3½ stiori, and yields eight or nine times as much; vetches four times the seed; beans three times; oats seven times; the wheat is a tolerable crop; all the rest miserable. If the farms, immediately under the eye of this able writer, yield no more in this *metà* system, we may suppose the poverty of the common products; we have, on the worst lands in England, no idea of such crops as these of vetches, beans, and oats. There are further on the 3 poderi, 36 sheep; 1 mule; 6 oxen; and 4 cows; also 50 barrels of oil, at 5 scudi; and 380 barrels of wine, at 10 liv. the barrel, vintage price, but at a year old 15 liv. or 16 liv.; in silk 25 scudi; and in wood 10 scudi, for three-fourths of the woods are in a state of destruction. These poderi are let *a la metà*; repairs are done by the proprietor; live stock belong to the incumbent, and neither to the church nor to the peasants; implements belong to the tenants; seed wheat, three-fourths to them, and one-fourth to the owner; of spring corn, all to the latter; also all sorts that are put in with the vanga (spade), as the land is so much the better laboured. Let it be remembered, that the spade being preferred to the plough, is the most decisive proof that tillage is in a state of mediocrity, if not barbarism.

MODENA.

In the mountains there are many peasant proprietors, but not in the plain. A great evil here, as in other parts of Lombardy, is the practice of the great lords, and the possessors of lands in mortmain letting to middle-men, who re-let to metayers; under which tenure are all the lands of the duchy. The tenant furnishes one-half the cattle, and the landlord one-half. To Reggio the number of scattered houses very great; good; and with neatly hedged home-stalls: apparently there is not a labourer's house in all the country; all metaying farmers.

PARMA.

PARMA.

Appearances from Reggio to this place are much inferior to those from Modena to Reggio; the fences not so neat; nor the houses so well built, white, or clean. All here metayers; the proprietor supplies the cattle, half the seed, and pays the taxes; the peasant provides the utensils. In the whole duchies of Parma and Piacenza, and indeed almost every where else, the farms must be very small; the practices I have elsewhere noted, of the digging the land for beans, and working it up with a superfluity of labour, evidently shew it: the swarms of people in all the markets announce the same fact; at Piacenza, I saw men, whose only business was to bring a small bag of apples, about a peck; one man brought a turkey, and not a fine one. What a waste of time and labour, for a stout fellow to be thus employed.

SAVOY.

All the peasants are proprietors. So long ago as the year 897, lands were let on lease for twenty-two years, and not wholly for a payment of fruits or service, as in all the northern parts of Europe, but partly at a money-rent. This shews how vastly more forward Italy was in those early periods, than the rest of Europe*.

It is said, that in 1464 began the custom of letting lands on a three years lease†.

SECT. V.—RENT AND PRICE OF LAND.

This, as I have endeavoured to explain already, in the case of France, is one of the most important inquiries in rural œconomy. The vulgar notion is, that nothing raises the value of land, but trade or manufacture. If the result of my travels, were only to produce facts sufficient to overturn so false a theory, my time would not be altogether lost.

PIEDMONT.—*Chentale*.

Land, in general, is sold at 800 liv. or 900 liv. the *giornata*, which is to the English acre as 7440 is to 7929. (*Paucton*.) At a distance from towns, 600 liv.

* ——— Uncerto Donno, che cerca da P. Abate di S. Ambrogio a nomo di livello, per ventidue anni, alcune terre nel Contado di Brescia, ch'erano del monistero d'Orona; promettendo di pagare a fisco cioè per fissa annuale pensione tanta quantità di generi, e di denaro. Secala modia decem, Seligine staria duodecem, faba, &c. &c. Giulini goes on; "Qui chiaramente si comprende, che s'ingannò il Mattioli il quale credette, che la segale fosse la filigine degli antichi." *Memorie della Città e della Camp. di Milano*. Giulini, parte ii. p. 62.

† Caronelli sopra l'*Instituzione Agraria della Gioventu*. 4to. 1789. P. 58.

to 850 liv. Some at 1000 liv. (53l. 6s. per English acre.) Good watered meads, 1000 liv. to 1200 liv.

Turin.

The price of land in the environs of Turin, as may be supposed, is very high. Four miles from the town, some is sold, without water, at 1200 liv. the giornata: with water, it depends on quantity, and the value is immense. Land that has one hour a week of such a stream as will water five giornate in that hour, sells at 1500 liv. (79l. 19s. per English acre); if it waters two giornate, 1000 liv.; and if three, 1200 liv. And such watering adds, at least, one-third to the value of the land. At Cambiano, five miles from Turin, arable land sells at 3000 liv. but this is uncommon. Near the town, such prices as 3000 liv. and 4000 liv. are known. But, in general, arable watered, near Turin, sells at 1000 liv.; at a distance, and not watered, 200 liv. to 550 liv. If a general average were to be made, of all sorts of land, except the very finest, it would be about 500 liv. In regard to rent, but little is let for money; chiefly at one-half produce; but such meadows as would sell at 1000 liv. would let at 70 liv. to 75 liv. If two-thirds are arable, and one-third meadow, 40 liv. will be about the rent in good lands. In the territory of Turin, arable lets at 30 liv.

Vercelli.

Rice-grounds, 500 liv.; good wheat land, 800 liv.; watered meadow, 600 liv. and 700 liv. per giornata.

MILANESE.

The price varies from 15 liv. for the poorest wastes, to 1000 liv. the pertica*; but from 600 liv. to 1000 liv. more common. As the livre is 7½d. English,
1000

* The difficulty I have met with, in ascertaining the contents of a Milanese pertica, is strange. Pauſton, in his *Metrologie*, makes it to the English acre, as 0.14727 is to 0.7929, by which proportion, it should contain 8090 feet, or about 5½ perticas in an acre. Count Alexander Cicogno, in the *Memoirs of the Patriotic Society of Milan*, vol. ii. p. 304, says, that if seeds are planted at fifteen oncie one from another, 1479 will plant a pertica. As the oncia is two inches English, this makes 9243 English feet in a pertica.

Monſ. De la Lande ſays, that it takes more than five perticas to make an arpent de Paris: now as that arpent is to the English acre, as 0.6694 is to 0.7929, there are conſequently 36,775 English feet in that arpent; at five perticas, it would conſiſt of 7355 English feet, or about ſix to an acre.

In the notes to the new edition of the *Venti Giornata* of Gallo (1775), this pertica is ſaid to contain 6152 French feet, which will not differ materially from De la Lande.

Count Carli, who was preſident of the ſupreme council of Finances at Milan, and has written intelligently on the *cenſimento*, ſays, *L'arpent di Francia ſta alla pertica Milanefe come 1½ ad uno proſſima mente.*

1000 liv. is 98l. 19s. 2d. per acre. It is usually bought in such a manner as to pay $2\frac{1}{2}$ to 3 per cent. for the purchase-money.

Between Milan and Pavia, land rendered good by water, some sells at 300 liv. to 500 liv.: at 300 liv. it lets at 12 liv.

From Milan to Mozzata, when you have passed the watered plain, which is in a few miles, the rent, in general, is not more than 4 liv. or 5 liv. the pertica. In every new lease, for a long period, such as eighteen or twenty-one years, there is always an augmentation of rent in every part of the Milanese, and generally to a pretty considerable amount. There is also an undoubted augmentation in the specie current in the country; and the prices of every thing have risen at the same time that money has increased. It highly deserves noting, by the politician, that as the Milanese subsists entirely by land produce, without trade (other than the sale of that produce), and without manufacture, it is remarkable that it has experienced an advance in its prosperity, as well as countries that seem to engross both trade and manufacture; even at a period long after it had attained a height of cultivation and improvement, to which those trading countries have little to oppose.

Lodi.

The best land near this place, 600 liv. the pertica (59l. 8s. per English acre); but farther off, 300 liv. to 350 liv. The *Spina*, a farm I viewed, belonging to the Caval. Don Bassiamo Bona Noma, lets at 30 liv.; others at 25 liv.; but the common price 12 liv. to 15 liv. The best land and highest rent is all for cows.

Codogno.

Watered lands sell at 300 liv. the pertica; and let at 10 liv. (19l. 9s. per English acre), nett rent, tenant paying censimento, &c.:

mente. (Delle opere del S. Conte Carli. 8vo. 1784. Tom. i. p. 223.) The arpent of France being to the arpent de Paris as 48 to 32, there are 55,162 English feet in it, and in the pertica (at $1\frac{1}{2}$ to 1) 31,500 feet. But the same author says (p. 320) there are 4868 pertichi in a square Italian mile; if so, there are 3628 in a square English mile; this makes $5\frac{1}{2}$ and $\frac{1}{6}$ pertichi to an English acre.

Finding so many contradictions, I judged it necessary to recur to different authority. The *uncia* of Milan is two English inches; and the measures thus arrange themselves;

One pertica 24 tavoli.

One tavola 12 piedi.

One piede 12 oncie.

Of these the tavola and pertica are square measures, the former containing 12 piedi *square*; this makes 576 English feet, which, multiplied by 24, the result is 13,824 feet for a pertica, or about $3\frac{1}{6}$ to an acre; and by this estimate I shall calculate.

Rent

	liv.	s.
Rent nett, - - -	10	0
Water-tax for distribution, - -	1	0
Cenfimento, - - -	2	5
Total rent, -	13	5

VENETIAN STATE—*Bergamo.*

Price of land near Bergamo, 80 ducats the pertica. The ducat is 8 liv. and 50 liv. the pound sterling; and, if the editors of Agostino Gallo be not mistaken, there are 6194 French feet in a pertica; on these proportions, land sells at 78l. 18s. per English acre.

Brescia.

The best sells at 800 scudi; commonly from 300 to 500 scudi the jugero. This measure containing 4 pertichi, and the English acre 4½, makes 400 scudi to equal 59l. per English acre, at 7 liv. the scudo. The best land, of 800 scudi, amounts consequently to 118l. Rents, per jugero, 5 to 10 scudi; the mean, 7½ scudi, equals 22s. English acre.

Verona.

Land here commonly sells at 70 zecchini the campo (44l. 6s. per English acre), and yields to the proprietor 3 to 4 per cent. I viewed an arable field close to the city, yet sowing with wheat, that would sell for 100 zecchini per campo: and some other lands, just out of the Porta Nuova, that are excessively gravelly, would sell for 15 zecchini; such poor land, at a distance, would not sell for more than 8 or 9 zecchini (5l. per English acre): it is, however, not so bad, but that good mulberry-trees are on it.

Vicenza.

The best watered meadows sell at 2400 liv. to 3000 liv. the campo, which is about 65l. per English acre; the best arable is nearly as valuable. The worst arable 300 liv.: in the best there are neither mulberries nor vines. Common price 900 liv. to 1000 liv.; and the produce 110 liv. per campo, about 55s. the acre. The highest rent in money is 3 zecchini the campo; common 1, 1½, or 2 zecchini. But, in general, land is let at half produce.

To Padua.

The best land sells at 45 zecchini the campo: rice-grounds are at that price.

Padua.

The best arable land sells at 200 ducats, of 6 liv. 4s. The campo is 840 per-tiche quadrate, each of 6 feet, consequently 30,240 feet; but the foot is 1 inch longer than the Paris foot; it is, therefore, equal to about 35,280 Paris feet*, or about $\frac{1}{10}$ th under an English acre. Middling land, 95 ducats; bad, 50 ducats; rice-grounds, and consequently irrigated, 200 ducats; the same land, before rice being planted, 100 ducats; watered meadows, 200 ducats; woods, 100 ducats; gardens, 400 ducats. Estates pay 5 per cent.

ECCLESIASTICAL STATE.—*Bologna.*

Landlords are paid by half-produce, which affords them about 1l. 6s. 3d. per tornatura, of half an English acre, and as much is left for the farmer: this is about 5l. 5s. an acre, gross produce, on an average; but it is in the rich plain only. Through all the country, and including good, bad, and indifferent, it varies from 8s. 9d. to 26s. 5d. the tornatura, for the landlord's share. The price for such land as yields the latter sum, is 21l. 17s. 6d. English, the tornatura: in general, from 8l. 15s. to 13l. 2s. 6d. The return for the value of land is 4 to 5 per cent. on the capital; but in farms on the mountains, 7 per cent.

TUSCANY.—*Florence.*

The landlord's half of the produce, for all farms are let *a la metà*, is about 3 liv. nett (2s. 1½d.) per stiora on the plain (11s. 8½d. per English acre)†: it is 2 liv. on the hills (7s. 8½d. per acre), and 1 liv. on the mountains. No other proof is wanted of the poor state of agriculture in this country, arising, doubtless, from so wretched a mode of letting land. What must it have been before the time of Leopold, who has done so much towards the annihilation of its old shackles?

Villamagna.

Three poderi, containing 200 stiori cultivated, and 283 of mountain wood, would sell at 12,000 scudi (3400l.); and, per stiora, for the whole, 7l. each: it also yields a rent, by metaying, of 500 scudi; and land is commonly sold to pay 3½ per cent. interest; but, more commonly, in other parts, only 3.

DUTCHY OF MODENA.—*Modena.*

The biolca, which is here the measure of land, is 29 French toises, by 26, or 754; or, to the English acre, as 27,144 is to 38,300; or as 15 to 21. This

* Mr. Paucton makes it more than an arpent of France, 1,0866. How he proves this, I am not arithmetician enough to know.

† This at the ratio of 5½ stiori per acre.

measure of arable sells from 500 liv. to 1200 liv.—the livre half that of Milan, or about 4d.; 800 would be 18l. an acre. Watered meadow sells at 1200 liv. to 3000 liv.; the latter equals 70l. an acre. Such are mown thrice; the first cutting yields 1 carro, of 100 poid, or 2500 lb. (the pound about $\frac{1}{4}$ ths of an English pound); and the price of hay 3 to 4 zecchini per carro.

PARMA.

The best land sells commonly at 50 zecchini the biolca (31l. 7s. per acre). To Firenzuola, the best sells at 25 to 40 zecchini.

PIEDMONT.—Vogara.

From St. Giovanni to Vogara, the price of the best is 500 liv. the journal. After that town, 24 scudi di Milano per tavola (about 20l. to 25l. per acre). From Vogara, to within a few miles of Turin, the average value of land is 500 liv. (26l. 13s. per English acre.)

SAVOY.

At Montmelian, vineyards sell at 1000 liv. to 1200 liv. the journal, which about equals a French arpent. On the mountain sides to Chamberry, on a soil, to appearance, absolutely stones, that yield good wine, and sell as high as meadow. Cultivated land, at Modena, in the Haut-Savoy, at 1000 liv. Improved mountain spots, 300 liv. to 500 liv.

The most careless examination of the preceding prices, will be sufficient to shew, that land is sold, at present, in Lombardy, some ages after it has lost both its commerce and its manufactures*, at prices that ought to mark the direct influence of immense industry; for it rises from 30l. to 100l. an acre, through a territory not comparable for soil, naturally, to many others. I will venture to assert, that the same *land* in England, would not sell for half, perhaps, not for one-third of the money. And it is worthy of remark, that the cities which possess most trade at present, as Leghorn, Genoa, and Venice, have little influence on the lands which sell at the prices here noted. It is not the competition of Venetian merchants that raises the prices on the *terra firma*; and what have those of Leghorn and Genoa to do with the Milanese and Piedmont? If Leghorn has not cultivated the Maremma, how was it to water the Lodizan?

* Every one knows, that, strictly speaking, there are both trade and manufactures in all parts of Lombardy; converting *raw* to organzine silk, is certainly a manufacture; and making a few velvets at Genoa, or glass beads at Venice, are manufactures; but, for all the purposes of argument, Lombardy, when compared with such countries as England and France, must be said to be almost destitute of them.

Bologna is, perhaps, the most manufacturing town in Lombardy; but has it drained the Commachio? If you recur not to present, but to antient wealth, you must turn to Florence*, Pisa, Genoa, and Venice; the two first are in one of the worst cultivated countries in Italy; of Genoa I know nothing, but by reading; but I have read no author that speaks of great cultivation in the Ligurian territory, *free from small peasant proprietors*: and let it be remembered, because it is a circumstance that merits it, that great commerce and fabrics, especially when depending on a *city* that governs a *territory*, have a direct tendency not to establish, but to annihilate such properties.

The effect of great wealth, flowing from industry, is to extirpate little properties, by the profits from trade being invested in their purchase; one country-gentlemen, with half a score farmers, and a hundred labourers, takes the place in countries, where the progress of wealth is in its natural course, of a number of little proprietors, who eat up all their produce, and yet are half starving for want. Is this the case in the Genoese territory? I am sure it is not at Venice.

The surest proof of the want of disseminated wealth in the country, is the almost universal practice of cultivating the land by metayers; if trade and commerce did much for Italy, which cannot be doubted, you must look for their effects, not in the country, but in towns. Those cities that possessed much industry (which I have named), carry sure proofs of former prosperity: go out of their gates, and you meet with none—from what did this arise? Probably from those cities being *sovereign* ones, and shackling the country with every species of monopoly, in favour of themselves. What is it, therefore, that will diffuse wealth through all the classes, and give verdure to the fields, as well as lustre to the towns? An equitable government. Whatever we possess in England, we owe to this origin; and it highly deserves notice, that it is not a cultivation superior to that of other countries, which distinguishes our island so

* For the immense manufactures and wealth of Florence, in the fourteenth century, see Giovanni Villani, lib. ii. cap. 93. “*In Firenze le Botteghe (anno 1330) dell’arte della lana erano dugento e più e facevano da settanta in ottanta mila panni di valuta di più di mille dugento migliaia di fiorini d’oro (sono a scudi fiorentini 22,860,000) che bene il terzo e più rimaneva nella terra per ovraggio senza il guadagno de’ lanajuoli. Del detto ovraggio vivevano più di 30,000 persone. Se per tutti i prodotti e manifatture dell’intera Toscana presentemente non entra più di un milione due centomila scudi; chiaro è, che tempo fa la sola arte della lana in Firenze produceva venti volte più utile di quello, che presentemente ne faccia tutto lo stato. Carli Saggio Sopra la Toscana, op. i. p. 348.*”

A most singular law passed during the republic of Florence, that no man should make proof of nobility, who was not able to deduce it from the manufacture of wool or silk. *Carli*, tomo v. p. 335. A mere commercial idea could no where root itself.

much,

much, as the establishment of a race of men generally found no where else ; a substantial and wealthy race of tenantry ; a race found in every corner of England : in Lombardy, you must go for such, not to Florence and Genoa, but to the Lodizan.

CHAP. II.

Of the Management of Grass Lands.

CATTLE and grass lands are so connected, that, I trust, it will not be deemed an impropriety to treat of them in the same chapter, and as parts of the same subject. The observations I have made in Italy, will be divided easily into—1, irrigation ;—2, live stock.

SECT. I.—OF IRRIGATION.

If there be one circumstance which gives a superiority to Lombardy, over all the other countries I have seen, it is this, and therefore merits the most particular detail.

PIEDMONT.—*Nice.*

Such is the consequence of water here, that a garden of 4 festaradi (a square of 12 trebucchi, *i. e.* 144 is a festarada, and 400 trebucchi a giornata, which is to the English acre as 0.7440 is to 0.7929), with a small house, lets at 20 louis d'or per annum, or about 15l. an acre.

Coni.

For the last ten miles from Nice to Coni, the country improves continually. The soil, near the mountains, is stoney, but is a good sandy loam lower in the vale. It is perfectly level, and watered with the utmost attention, in a manner I had not noticed before ; not, as in Spain, in beds, but the field is ploughed flat, sown with wheat, the clods broken with hoes and bush-harrowed, and then great deep trenches struck with the plough, for letting in the water ; these are 8 to 12 yards asunder. They are now (September) watering clover 8 inches high, by letting the water into these trenches, and conducting it in a singular manner.

manner. A man walking backwards, draws, by a line, a bunch of straw and weeds, just large enough to stop the water in the trench, and force it to overflow on each side. This is an expensive and operose method, and inferior to the Spanish. The crops now on the ground are maiz; good, but not extraordinary: millet, and a little hemp; the male plants picked. A great deal of clover, but not much that is clean. But meadow abounds, which is the glory of Piedmont; and the conducting of the water, in multiplying conduits, seems well understood, and practised in great perfection.

Coni to Chentale.

In the watered meadows, much *chicorium intybus* and *plantago lanceolata*. Watered meadows are cut thrice commonly; but, in some seasons, four times.

Racconis.

The watered meadows are now mowing for a third time; the predominant plants—the *chicorium intybus*, *plantago lanceolata*, *acchillea millefolium*, and *trifolium pratense*.

To Turin.

From Coni to Turin, something more than half the country appears to be watered; possibly two-thirds; and wherever the water is carried, it is apparently with great skill. It is, however, rather singular, that more trenches are not cut for taking the water off the land; the attention is chiefly paid to bringing it on; from which we may conclude, either that the heat of the climate renders such drains less necessary than in England,—or that water is too valuable, from every one understanding its use, to be brought on in the least superfluous quantity. The contrivance, towards Turin, for carrying the aqueducts of irrigation across the roads, are beautifully executed; for convenience of distribution, the water-course is raised three or four feet, or more, above the general level: these aqueducts are brought to the side of the road, and seemingly finish in a wall, but really sink in a syphon of masonry under the road, and rise on the other side, behind another similar wall. Seeing these buttresses of masonry, without perceiving, at first, any water, I wondered, for a moment, to what use they could be assigned; but when I mounted the foot-way, this beautiful contrivance was, at once, apparent. These are noble exertions.

Turin.

The irrigation in all this vicinity, is extensive, and carried to great perfection. Water is measured with as much accuracy as wine. An hour per week is sold, and the fee simple of the water is attended to, with the same solicitude as that of the

the land. Rich meadows, without water, sell for 1000 liv. and 1100 liv. a giornata; and arable, worth 500 liv. without water, is, in many instances, worth 2000 liv. with it. Such a meadow as will sell for 1100 liv. or 1200 liv. per giornata, will yield, the first mowing, 115 rubbii of hay, worth 9s. to 10s. the rubbio; the second, 90 rubbii, at 7s. to 8s.; and the third, 80 rubbii, at 6s. to 7s.: the fourth growth is fold, to be eaten by sheep, at 5 liv. This produce amounts to 120 liv. or 6l. English, per giornata, which is under an acre. The interest of 1100 liv. being at 40 liv. or 50 liv. there remains a sufficient profit, after all expences are paid. During the winter, as the meadows are commonly fed with sheep, they do not water at all. Some experienced cultivators avoid watering in the spring, till the frosts are over, which happen here as late as the 10th, and even the 15th of May, as a strong fresh vegetation is, in such cases, entirely cut off; but, in general, no attention is paid to this circumstance; and watering goes on at all times, except when sheep are on the ground. Those who have water enough, let it on to their land once a week, during the whole summer; but if the weather is wet, once a fortnight; and a day or two before cutting, if the water is perfectly clear. In regard to the quality of water, they make no other distinction than that from mountains being cold; and that of the Dora, near Turin, being charged with so much sand as to be bad. They attend to the cutting of weeds in the canals, that they may rot; and some good managers harrow the bottoms in the spring, to foul the water, which then acts more powerfully as a manure. Another practice, which tends also to prove what excellent farmers they are in all that respects meadow-grounds, is that of paring and burning, which they perform on pieces that have a bad herbage, or want improvement; but do not sow them with corn, or any other plant, except hay-seeds, in order to renew the grass, with no other interruption. It is impossible to praise such practices too much. They call this husbandry *motara*.

The power of effecting the great works in irrigation, which are visible over this whole country, depends very much on the law, which supposes the right and property of all rivers to be vested in the king; consequently all canals taken from them, are bought of him; and this ensures another regulation, which is the power of carrying the water, when bought, at the pleasure of those who buy it, where they think fit; they cannot, however, cut across any man's ground, without paying him for the land and the damage; but the law does this by regulations known to every one, and no individual is allowed a negative upon a measure which is for the general good. The purchasers of water from the king, are usually considerable land-owners, or communities that have lands wanting water; and it is of no consequence at what distance these lands may be from the river, whence the water is taken, as they have a right to conduct it where they choose, provided they do not cut through a garden or pleasure ground.

ground. Nor can they carry the water *under* that of others, whose canals are already made, as they might in that case deprive them of a part of their water; they are obliged to throw aqueducts *over* such canals. The benefit of water is so great and well understood, that nobody ever thinks of making objections; and in case their lands are not already watered, it is no small advantage to have a new canal brought through them, as they have the opportunity of buying water of the proprietors. It is sold per hour per week, and even half an hour, and down to a quarter. The common price of an hour per week, for ever, is 1500 liv.—At Gruliascho, four miles from Turin, there are many Persian wheels that lift up the water by buckets; the wheels are double, with washers between for the stream turning them; the buckets or boxes on one outside only; they raise the water 8 or 10 feet, and about $2\frac{1}{2}$ short of the full diameter of the wheel, and I could not perceive that they lose a drop; none falls, except what adheres to the wheel itself. To save the expence of multiplying sluices, for the occasional stoppage of water, in carrier trenches, to force it over the land, they have a moveable board that fits the trench, which is placed occasionally where wanted, and answers the purpose well. They have none of the ramifications of carrier trenches common among us; and not so many drains for taking the water off as with us; and, on the whole, do not shew any thing like our attention in the use of the water, though twenty, or rather an hundred times more in bringing it from rivers, and distributing it about the country; and I could not but observe, that their meadows have much bad herbage, and many places damaged by the water resting too long; this is more the case here than it seemed to be from Coni to Racconis, where the meadows carried a better countenance.

Turin to Chivasco.

Not one-third of this country is watered. At Chivasco but little also. After crossing the Dora Belta, there are soon two considerable canals of irrigation; one made two years ago only, which is as great a work as a navigation in England.

Ciglione.

Little land watered in this country; but I observed here some meadows, with off channels, from the principal ones, for conducting the water, which I did not notice before; but very few drains. The new canal crosses a gravelly waste, but none of it watered.

Trouchan.

A very rich country much watered; and many mulberries.

St. Germano.

Mowing the third crop of grass, and very poor; not more than 15 cwt. an acre, and yet watered. The glory of Piedmont is from Coni to Turin. Those who pass Mont Cenis to Turin, and Turin to Milan, see, on comparison, nothing.

Vercelli.

The new canal, now making, for taking water from the Dora Baitia, and conducting it to the rice grounds of Vercelli, is done by the King, and will cost three millions; the water is sold to communities. The other I crossed near the Dora, at the same time, was made long ago, and belongs to the Marquis de Bourg.

MILANESE.—*Buffalora.*

After crossing the Tesino, in several branches, and entering the Milanese, we find a great system of watering meadows to Buffalora, where that magnificent canal, the Navillio Grande is 20 yards broad, and though navigable, was originally made for irrigation alone.

St. Pietro Olmo.

Hence, for some distance, there is no watering; but then there is something in our Berkshire method; the lands are arched up, and just in the centre, on their crown, are the carrier trenches for conducting the water, and on each side a row of low fallows; some of these lands are two rods broad, and two feet higher in the ridge than in the furrow; the land firm and the herbage good: wherever the meadows seem good, there is abundance of *chicorium intybus*, *plantago lanceolata*, and *trifolium pratense*.

Milan.

As the irrigation of the Milanese is perhaps the greatest exertion of the kind that ever was in the world, and certainly the first that was undertaken in Europe, after the decline of the Roman Empire; it merits every attention that a farming traveller can give; for it will be found, by very briefly recurring to records, which have been searched, that great exertions (perhaps as great as ever known) were made in this country, at a period when all the north of Europe was in a state of barbarism. In the year 1037, mention is made of the canal Vecchiabbia. In 1067, watered meadows were common, called *prato roco*, by Landolfo*. In 1077, there are notes of many streams used. In 1138, the

* *Giulini*, tom. iv. p. 122. 224. 225.

monks of Chiarevalle bought of Giovanni Villano some commons, woods, and meadows for 81 liv. under the contract (a parchment yet remaining) "ut monasterium possit ex Vectabia trahere lectum ubi ipsum monasterium voluerit et si fuerit opus liceat facere eidem monasterio fossata super terram ipsius Johannis ab una parte viæ et ab alia. . . . &c. possit firmare et habere elusam in prato ipsius Johannis, &c." There is a similar contract of the following year, and various others, until the beginning of the 13th century; from which, and others, it appears, that the Vecchiabbia was the entire property of the monastery, and confirmed in 1276 by the diploma of the Emperor Frederick II. The merit of these monks appears to have been great, for they gained such a reputation for their skill and industry, that they had many applications for assistance in directing works similar to their own upon uncultivated lands; and the Imperial Chancellor Rinaldo, in the time of the Emperor Frederick I. being appointed archbishop of Cologne, found the possessions of his see in such a deplorable state, that he applied for, and received the same assistance, as reported by Cesario Eisterbacense. Their greatest exertions were in irrigation, which was so well known, that they sold their superfluous water, transferring the use and property of some by the hour, day, and week. In two centuries they came to be possessed of 60,000 pertiche, mostly watered: there is reason to believe that the practice, in the 13th century, did not materially differ from the present modes; because, in the papers of the archives of the abbey of that period, mention is made of *chiuse*, *incastri*, *bochilli*, *foratoi**, and other works, to distribute the water, and regulate the irrigation†. In 1164, the Emperor Frederick gave various rights, in certain rivers, to the people of Pavia for the purposes of irrigation‡. In 1177, the people of Milan enlarged and continued the Navillio Grande, from Abbiate Grasso to Milan, being 14 miles; it was brought from the Tesino, near the Lago Maggiore, to Abbiate Grasso, 20 miles, by the people of Pavia, long before the date of any records now known to remain§. In 1271, it was made navigable. It is thirty-two Italian miles long, and twenty-five braccia wide, or forty-nine English feet||.

The second great work, was the canal called Muzza, which takes the waters of the Adda, at Cassano, and carries them to Marignano, there dividing and

* *Chiuse*, are sluices; *incastri*, are water gates, that are moved perpendicularly; *bochilli*, openings in the banks to distribute water; *foratoi*, discharges for carrying off superfluous water; the same as *scaricatori*.

† *Memorie Storica ed Economica sull'Irrigazione de Prati. Don. Ang. Fumagalli Atti di Milano*, tom. ii. p. 215.

‡ *Giulini*, tom. vi. p. 330.

§ *Nuova Raccolta d'Autoriche trattano del moto dell'Acque. Parma. 1768. 4to. Tom. vii. P. Friis. P. 97.*

|| *Ibid*, p. 98.

watering much of the Lodizan. It was executed in 1220*, and done in so admirable a style, that Padre Frisi, in the preface to *Modo di regolare i fiumi, &c.* says,—“ il meccanismo d'irrigar le campagne è stato ridotto all'ultimo grado di maestria e di perfezione nel canale di Muzza †.” And Padre Antonio Lecchi, another great engineer and mathematician, remarks,—“ De'nostri trè celebri canali di Muzza, e de'due navigli qual altra memoria ci rimane ora, se non se quella del tempo della loro costruzione, e d'altre poche notizie, niente concorrenti al maraviglioso artificio della loro condotta ‡.”

In 1305, the canal of Treviglio was made, which takes the water from the Brembo, and carries it, for several miles, about twenty-five feet wide, and about three deep; it irrigates the territory of Treviglio and the Ghiara d'Adda. And, within four or five miles, there are five canals, taken from the Adda and the Brembo, all of great antiquity. In 1460, the canal de Martesano was begun, under Duke Francis Sforza I.; it was twenty-four miles long, and eighteen braccia (thirty-five English feet) wide; since lengthened seven or eight miles more. It takes the waters of the Adda, a little before Trezzo, by means of a powerful wear (*chiuse*) founded upon the living rock; it is then supported for five miles by a solid wall of stone, forty braccia (eighty feet) above the bottom of the Adda, and parallel with it. At Gorgonzola, it passes over the torrent Molgora, by a bridge of three stone arches. At Carsenzago, it is crossed by the river Lambro, which enters and quits the canal with all its floods. And, in order to prevent the surplus of water, which this circumstance occasions, from breaking the banks of the canal, or overflowing them, there are nineteen scaricatori in the canal, above, below, and facing the junction, which are so calculated, that they have not only powers sufficient to take off the waters of that river, but also half of those of the canal itself. These scaricatori are canals which take the water, when sluice-gates are opened for that purpose, and convey it, at various distances, to the Lambro again; the fall in its course being considerable enough to free the canal from all superfluity of water. Near Milan, this Navillio receives the torrent Seveso; and, after surrounding the city, unites with the Navillio Grande and the Olona. The sluices which Bellidor supposed to be invented by the Dutch, were used, for the first time, near Padua, in 1481, by two engineers of Viterbo, Dionisius and Peter Domenico, brothers §. Leonardo da Vinci profited immediately of this great invention, for

* Verri, Storia di M. t. i. p. 240.

† Nuova Raccolta, tom. vii.

‡ *Ib. Piano, &c. de tre torrenti*, p. 141.

§ *Moto dell'Acque*, vol. v. Parma, 1766, p. 359. Mentioned by Zendrini in the tenth chapter, *Sopra l'Acqua Corrente*. This is the common supposition in Lombardy, and is thus recorded; but it appears to be an error, by a passage in *Giulini*, tom. xii. p. 332, where, anno 1420, mention is expressly made of them, *machinarum quas conchas appellant, &c.*

the union of the two canals of Milan; and finding between them the difference of the levels to be eighteen braccia*, he, with six sluices, in the year 1497, under Ludovico il Moro, opened and facilitated the navigation from one to the other. The greatest *scaricatore*† of the waters united at Milan, is the canal of Vecchiabbia, which, after having served some mills and irrigation, falls into the Lambro near Marignano; and if this canal were made straight, and supported by some sluices, the navigation might be continued to the Lambro, and thence to the Po and the sea. Both these canals, the Grande and the Martesano, are so contrived, as to be completely emptied once a year, for cleaning and repairing whatever accidents may have happened to any of the works.

I have entered into this digression upon a very curious subject, little known in English literature‡, in order to shew how well irrigation was understood, and how admirably it was practised, when the countries on this side of the Alps were barbarous. At the same time, however, that justice is thus done to these great exertions, we must bear in mind, that few districts in Europe are better, or so well, situated for irrigation. The lakes of *Maggiore* and *Como*, nearly upon the same level, are three hundred feet (one hundred and fifty braccia) higher than Milan,—and that of *Lugano* two hundred feet higher than those, with a nearly regular declivity to the Po§.

There are authors who have asserted, that agriculture is improved in consequence of great trade or manufactures only; but the instance of the immense irrigation in the Milanese, effected by these and many other canals, too numerous to mention, will not allow of such a conclusion being general; and to shew that my opinion is not without foundation, a very brief review of the state of Milan, so far as it respects these periods, will not be displeasing to a reflecting reader.

In 1177, when the canal de Navillio Grande was made, the republic of Milan had been gradually forming for about two hundred years||; but these dominions were exceedingly confined;—Lodi, Pavia, Mantua, Verona, Crema, Tortona, Como, Bergamo, Brescia, Piacenza, Parma, Genova, Asti, Vercelli,

* P. 98. *Frisi*.

† The *scaricatori* are what I believe we call weirs in England; they are dischargers of superfluous waters. Mr. Brindley made them, in the Duke of Bridgewater's canal, circular, and in the centre of the river, to convey the water, as into a well; but in Italy they are cuts or openings in the banks of the canal, at places that allow a quick conveyance of the water; for instance, where a canal crosses the bed of a river: their powers are calculated with such a mathematical exactness, proportioned to the quantity of water brought into the canals, by the rivers joining them, that no floods ever affect the surface, which is of an equal height.

‡ One would naturally look for some knowledge of these facts in *Anderson's Deduction of Commerce*; but we shall look in vain.

§ *Verri, Storia di Milano*. 1783. Tom. i. p. 5.

|| *Storia di Milano*. P. Verri. 4to. 1783. Tomo i. p. 142.

Novara, Cremona, Ivrea, Padua, Alba, Treviso, Aquileia, Ferrara, Reggio, Modena, Bologna, Imola, Cesena, Forli, Rimini, Fano, and Ancona,—were, at that time, independent republics*; which united against Milan, in 1162, with the Emperor Frederick I. and besieged and destroyed it. This singular fact, that in fifteen years after one of the most signal destructions that could be brought upon a city, there should be found energy enough in a petty republic, to undertake a work which is, in the present age, regarded as an honour to Lombardy, must be admitted as a proof, that the trade and manufactures of that period could have been but very inconsiderable.

Milan, however, unquestionably arose to great power and prosperity; and our business is to inquire into that period, whence we may judge how much its commerce might influence the perfection to which she has carried her agriculture.

- 1042, Civil war; the nobility driven out by the people.
- 1056, The government changed.
- 1067, Meadows watered. *Guilini*, IV. 122.
- 1108, War with Pavia.
- 1111, Lodi destroyed by Milan.
- 1127, Como destroyed by Milan.
- 1153, Frederick Barbarossa interposes.
- 1162, Milan taken and destroyed.
- 1167, The people of Milan living in tents and cabins. To,
- 1183, War with Frederic.
- 1177, Navillio Grande continued to Milan.
- 1191, Grant of waters to Pavia, for irrigation, by the Emperor Henry VI.
- 1204, The nobility expelled.
- 1210, The archbishop's revenue 80,000 fiorini d'oro, equal to 10 millions of livres now.
- 1216, A woollen manufacture.
- 1220, The canal of the Muzza made.
- 1221, The archbishop and nobles expelled.
- 1237, War against the Emperor Frederick II.
- 1240, Government reduced to pay in paper money; the origin of all that has passed since in Europe.
- 1257, The nobility expelled.
- , The Navillio Grande begun to be made navigable.
- 1263, Factions of the Guelphs and Ghibellines now in full activity at Milan.
- 1271, The Navillio Grande navigable.

- 1277, Civil war;—Toriani and Visconti.
 1281, Ditto.
 1288, Milan buys wool from France, Flanders, and England.
 1296, Decree, that gave to every one the power of conducting water across all great roads, provided stone bridges were erected.
 1302, Revolution;—the Toriani get the better of the Visconti.
 1305, Canal of Treviglio made.
 1310, Revolution;—the Visconti prevail.
 1327, Violent factions of the Guelphs and Ghibellines.
 1332, Grant of water for irrigation to the people of Treviglio.
 1350—1385, Tyranny of the Visconti drives away the manufactures.
 1395, Great Power of Milan over the cities of Lombardy.*
 Through every part of the 14th century, the passages in the Annals are numerous which prove how well irrigation was understood, and how highly canals of water were valued.
 1421, Milan exports cloths to Venice.†
 1457, Most of the conquests of Milan lost.
 1460, Canal de Martesano made.
 1481, Sluices invented at Padua.
 1497, Leonardo da Vinci joins the canals at Milan.

It should seem, from this detail, that the exertions in irrigation were almost purely agricultural; the benefit enjoyed by the people of Pavia, from the Navillio Grande, was a constant proof of the advantages to be derived from similar canals; and they were executed at moments which will not allow us to attribute them to the influence of manufacturing or commercial wealth.

* In 1378, Giovanni Galeazzo Visconti Conte di Virtù was declared Duke of Milan, his dominions then comprising Arezzo, Reggio, Parma, Piacenza, Cremona, Lodi, Crema, Bergamo, Brescia, Verona, Vicenza, Feltro, Belluno, Bassano, Bormio, Como, Novara, Alessandria, Tortona, Vercelli, Pontremoli, Bobbio, Sarzana, Pavia, Valenza, Casali, Padua, Alba, Asti, Bologna, Pisa, Siena, Perugia, Nocera, Spoleto, and Assisi. *Verri*, p. 417.

† As this woollen manufacture is said to have been in the hands of an order of friars, the *frati umiliati*, we have no reason to suppose it an object of great consequence; the expressions seeming to imply its magnitude being applicable to a comparison with poorer neighbours. Count Giulini says, on occasion of its being carried from Milan to Sicily, "*che tanto fioriva fra noi*," (tom. viii. p. 585;) but records do not explain the extent; though we are told that they worked up wool from France, Flanders, and England, in 1288 (tom. viii. p. 399.); which trade had existed to some degree of consideration in 1216. Count Verri uses the expression—"lavoro de pannilani la quale formò la ricchezza cospicua di Milano," (*Storia di Milano*, tom. i. p. 357.) But it was Venice, Genoa, Pisa, Amalfi, and Ancona that had the empire of the sea, which gave that author reason to say, "*che tutto il commercio dell' Europa era presso gl' Italiani*," (tom. i. p. 465.)

To this may be added, that during the thirteenth and fourteenth centuries*, Italy was the perpetual scene of bloody wars: the Venetians and Genoese, the Venetians and the Milanese, and, in their turns, the other republics, seem to have had no other business than that of cutting each others throats. A perpetual state of warfare, and so many revolutions as were taking place in the governments of the Italian cities, were little adapted to give a security of possession essentially necessary to the establishment of such manufactures and commerce, as shall, by the overflowing of their surplus, ameliorate the agriculture of a country.

It was but fifteen years after the destruction of Milan, that the Navillio Grande was made; and within three years after the loss of all her conquests, that the canal de Martesano was digged: these great undertakings were, therefore, executed at periods when commercial prosperity could least of all effect them. There was no stability in that prosperity. It is also to be remembered, that throughout this period of Milanese history, that people, even at the height of their power, were never masters of a commercial sea-port. It is true, that they twice took Genoa; first in 1353, but kept it for a very short time; and again in 1421, when they were in possession of it but fourteen years; and amongst all the dominions of Galeazzo Visconti, Sarzano was the only port, and that never a commercial one; thus the fabrics of Milan were obliged to be exported through the Venetians or the Genoese, who laid duties on the transport of their commodities.

The conclusion of the whole seems fairly to be, that we are not to attribute the irrigation of the country to wealth derived from foreign commerce; the fertility and excellent management of the lands supported a great population, which proved as industrious as public calamities and confusions would allow; but it does not appear that this industry was ever continued through a long series of peace and happiness.

Another idea has been started, that Lombardy owed her irrigations to the effect of the crusades; that the mad enthusiasts, who went upon those expeditions, brought home with them the art of cutting canals, for this most beneficial purpose; but history does not give sufficient lights to allow of this conclusion. I have already remarked, that the Navillio Grande was made by the people of Pavia, long before those of Milan made the cut to that city; and so long before, that no records in the archives were found of it by that most

* In the preceding periods it was probably worse. Count Verri observes, "Dello stato della popolazione nel decimo secolo—mi pare verosimile che dovesse essere mediocrementemente popolata Milano. Le terre erano coltivate parte da servi e parte da liberti. Molte parti del ducato era bosco. In qualche luogo, che ora si coltiva forse, ancora v'erano delle acque stagnanti." *Storia di Milano*, tom. i. p. 76.

industrious searcher into antiquity, Count Giulini. This fact seems nearly decisive; for the first crusade did not commence till 1096, nor terminate till 1100, before which period there is every reason to suppose, the canal in question was cut, as the researches of Giulini go so far back as 773. The crusades ended in 1291; and, had the effects been as great as possible, yet they cannot be imagined to have taken place immediately; it must be, after much consultation and long reasoning, that whole towns could be brought to co-operate in the execution of such plans for the common good, from mere reports of the effect in distant countries and different climates. Another circumstance, tending to prove that irrigation in Lombardy was much more antient than the crusades, is, that Theodoric, who began to reign in Italy anno 493, publicly rewarded an African who had come thither, in order to instruct the Italians in the art of irrigating lands, as Mr. Professor Symonds has explained, with his usual elegance, in his most agreeable paper on the effect of water in the agriculture of Italy *. Now if this art had been thus introduced, or, more properly speaking, revived in Italy above six hundred years before the crusades were thought of, there cannot be much reason for attributing that improvement to the observations of those frantic enthusiasts. It is remarkable, that Count Verri, in his History of Milan, says, he had long conceived, that their irrigations were to be ascribed to the Crusades; but, from paying more attention to the authorities quoted by Count Giulini, he gave up that opinion, and concurred in the idea of a greater antiquity †: for which also P. Frisi seems to contend, when he says expressly, that the canal made by the people of Pavia was more antient than 1177 ‡.

And here it may be worth remarking, that Pavia was the capital and residence of Theodoric, whence there results, at least, a presumption, if he sent to Africa for a person to instruct the Italians in irrigation, that here was the field of his exertions; and that this very canal was the work of that sovereign, not the less celebrated for thus laudably applying himself, in a barbarous age, to works that would do honour to the politest.—But to return from this long digression.

The same law that has been so effectual in watering Piedmont, operates here also, and has done even greater things. He who discovers a spring, conducts

* Annals of Agriculture, vol. i. p. 421.

† *Storia di Milano*, tomo i. p. 354.

‡ Con tutte questo però, se imparzial mente si vorrà avere riguardo al tempo, alle circostanze, alla maestria del lavoro, il naviglio di Milano che forma la comunicazione del Tesino, e dell'Adda, potrà passare per il capo d'opera, che abbiamo in questo genere. Per quanto dice il Sigonio nel libro 14 del regno d'Italia all'anno 1179, pare che il primo tronco dello stesso Naviglio, del Tesino ad Abbiate Grasso, fosse già dai tempi più antichi incominciato e finito dai Pavesi per irrigare le vicine loro campagne. Fù nell'anno 1177 che i Milanesi condussero lo stesso cavo da Abbiate a Corsico, e a Milano. *Nuova Raccolta*, vol. vii. p. 97.

it where he pleases, paying a fixed compensation * for cutting through the properties of others. All rivers belong, as in Piedmont, to the sovereign, who sells the waters to speculators for this most beneficial purpose of irrigation. In the distribution of it, by sale, they do not measure by the hour, as in Piedmont, but by the ounce; 12 oz. are a braccio, or 22 inches: an ounce of water is a stream that runs one braccio long and one ounce deep; and the farther the water has run, the higher is the price, as being more charged with manure.

As an example of the beneficial influence of this law, I was shewn, between Milan and Pavia, a spring that was discovered two miles from the lands of the discoverer, the properties of many persons lying between him and the spring. He first bought the property of the person in whose land it was situated, which was easily done, as it was too low to be there of any use; then he conducted it by a trench at pleasure the two miles, paying the fixed price for cutting through his neighbours lands; and, having gained it upon his own, presently changed poor hungry arable gravel into a very fine watered meadow.

Near Milan, a watered meadow sells at 800 liv. the pertica (32l. 15s. the English acre); and the rent of such is about 30 liv. (11. 5s. the English acre). This must not, however, be classed high; for there are lands that rise to 4000 liv. (163l. the English acre). In land at 800 liv. or 1000 liv. water often makes half of the value; that is, the rent to the owner of the land will be 15 liv. to 20 liv.; and as much to some other person for the water.

In viewing a great farm, six or seven miles from Milan, in the road to Pavia, I found that all the watered meadow was mown four times; and that what was watered in winter, *prati di mercita*, five times. Such is the value of water here, that this farm, which watered is rented at 20 liv. the pertica, would not let at more than 6 liv. without water, the soil being gravel. The irrigation of the *mercita* begins in October, and lasts till March, when it is regulated like all other meadows. All in general begin in April, and last till September; and if there be no rain, once in seven to fifteen days. An ounce of water, running continually from the 24th of March to the 8th of September, is worth, and will sell for 1000 liv. When arable crops want water, it is always given.

Milan to Mozzata.

Every considerable spring that is found, becomes the origin of a new canal. They clear out the head for a basin, and sink casks, by way of tunnels, for the

* These laws, relative to the conduct of irrigation, are as old as the republic of Milan; first compiled into a collection of statutes and customs in 1216 (*Verri*, p. 239.) They were revised and collected, by order of Charles V. and are in full force to this day. *Constitutiones Domini Mediolanensis Decretis et Senatus Consultis. Gab. Verri. Folio, 1747. De aquis et fluminibus, p. 168.*

water to rise freely, and without impediment from mud or weeds. There are usually three, four, or five of these tunnels, at the bottom of a basin of twenty or thirty yards.

Milan to Lodi.

Of all the exertions that I have any where seen in irrigation, they are here by far the greatest. The canals are not only more numerous, more incessant, and without interruption, but are conducted with the most attention, skill, and expence. There is, for most of the way, one canal on each side of the road, and sometimes two. Cross ones are thrown over these, on arches, and pass in trunks of brick or stone under the road. A very considerable one, after passing for several miles by the side of the highway, sinks under it, and also under two other canals, carried in stone troughs eight feet wide; and at the same place under a smaller, that is conducted in wood. The variety of directions in which the water is carried, the ease with which it flows in contrary directions, the obstacles which are overcome, are objects of admiration. The expence thus employed, in the twenty miles from Milan to Lodi, is immense. There is but little rice, and some arable, which does not seem under the best management; but the grass and clover rich and luxuriant: and there are some great herds of cows, to which all this country ought to be applied. I cannot but esteem the twenty miles, as affording one of the most curious and valuable prospects in the power of a farmer to view; we have some undertakings in England that are meritorious; but they sink to nothing, in comparison with these great and truly noble works. It is one of the rides which I wish those to take, who think that every thing is to be seen in England.

Lodi.

Examining some watered meadows, in high estimation, I found the following plants most predominant, and in the order in which I note them:—1, *Ranunculus repens*; 2, *Trifolium pratense*; 3, *Chicorium intybus*; 4, *Plantago lanceolata*; 5, *Achillea millefolium**; and about one-fifth of the whole herbage at bottom seems what are properly called grasses. These rich meadows about Lodi are all intersected by ditches, without hedges, but a double row of pollard poplars; all on a dead level, and no drains to be seen. They are now (October)

* There appeared but few signs of ray-grass, yet it certainly abounds in some of their fields: opinions in Lombardy differ concerning it; Sig. Scannagatta praises it highly (*Atti di Milano*, tom. ii. p. 114.); but one of the best writers in their language, Sig. Lavezari (tom. i. p. 82.) wonders rather at the commendations given of it in other countries: he mistakes the French name, it is not *sainfoin*; the *lojessa* of Lombardy, and the *ray-grass* of England, is the *lolium perenne*; the French *sainfoin* is the *bedysarum onobrachis*.

cutting

cutting the grafs and weeds in the ditches, to cart home for making dung. The meadows are commonly cut thrice; but the best four times. The produce of hay per pertica, 6 *fassi*, of 100 lb. of 28 oz. at the three cuts. Price of the first, 8 liv. per *fass*; of the second, 5 liv.; of the third, 4½ liv. They water immediately after clearing, if there be no rain. Without irrigation, the rent of the country in general would be only one-third of what it is at present. In forming these watered meadows, they have very singular customs:—all are broken up in rotation; flax sown for the first crop, and their way of laying down is to leave a wheat stubble to cloathe itself; clover is prohibited by lease, from an absurd notion that it exhausts the land; and that it is not so good as what the nature of the ground gives; but on worse land, the other side of the Adda, they sow clover.

Lodi to Codogno.

All this country the same as about Lodi; a dead level, cut into bits of from three to ten acres, by ditches, without hedges, and planted with double rows of poplars and willows, all young, for they are cut as soon as the size is that of a thin man; here and there one is left to run up for timber. I remarked, in the meadows fed, that the *ranunculus* is avoided by the cows as much as possible. I expected, in one meadow, to find it the *acris*, but much of it was the *repens*. All this country is alternately in tillage; ridge and furrow every where; no permanent meadow. After seven miles, the road being natural, shews the soil to be a loamy sand, binding with rains*.

Codogno.

Thirteen pertiche of watered land necessary for a cow; the hay of which is cut thrice, and it is fed once; such land sells at 300 liv. and lets at 10 liv. free from tax. The whole country is ploughed by turns, being down to clover for the cows four years.—1, Flax, and then millet; 2, Maiz; 3, Wheat and clover; and rests then for feeding cows; white clover comes, but it is bad for cheese. The reader will note, that this opinion differs from that near Milan.

* As well watered as this country is, yet in the spring 1779 the season was so dry, that, where the Lambro enters the Po, men and women crossed the Po itself on foot, as if merely a rivulet; the rector of Alberoni himself passed it, and the water reached only to his middle. The damage was great every where, but fatal in the Lodizan, where herds of cows were obliged to be sent out of the country to be pastured: the mischief the greater, as from 1774 to 1779 they had augmented their cows 5000, (*Opuscoli Scelti*, tom. iv. p. 56.) The climate has, however, in all ages, been subject to great droughts. From May 1158 to May 1159, there fell no rain in Lombardy; wells and springs all dried up. The Emperor passed the Adige, with his army, near Verona, without boats; and the Count Palatine of Bavaria passed thus the Po, below Ferrara. *Giulini*, tom. vi. p. 175.

Codogno to Crema.

Crossing the Adda, from the Lodizan, there is more arable, and much fewer cows.

Milan to Vaprio.

In this line there are some dairies, but not many. Near the city, there is much grass, all cut into patch-work of divisions, and planted so as to seem a wood of willows; after that much tillage; though all is flat, and there are no great exertions in watering. But the road passes by that fine navigable canal de Martesano from Milan, which, at Vaprio, is suspended as it were against the hill, twenty feet above the Adda;—a noble spectacle.

Before we quit the Milanese, it will be proper to make a general remark on the conduct of their irrigation, that some evils are observed to attend the practice for want of a better foresight and more attention; particularly from the gradual enlargement of the carrier canals and ditches; they clean them with so much care, for the sake of obtaining the mud, as a manure, that these are everywhere become too wide for the quantity of water they convey. Sig. Bignami has written upon this point very rationally, in his dissertation *Sull'abuso di scavare i canali delle rogge ed i fossi nel Lodigiano*; where he asserts, that one-tenth part of their lands is occupied by canals and ditches. The evils are numerous; it is not only a considerable loss of land, but it is an equal loss of water, for when an oncia of a given run of water is purchased, there is a great difference between its first fitting a great or a small channel, as in proportion to the size will be the quantity of useless fluid. The atmosphere is also proportionably contaminated; for this great breadth, either of stagnant water, when irrigation is not actually going on, or, what is worse, of mud, in so hot a climate, must be pestiferous; and to this have been attributed the distempers which have frequently made such havoc amongst their cattle. Another inconvenience is, the greater expence of all erections, bridges, sluices, &c. &c. which are in proportion to the breadth of the channels. The remedy is obvious; it is to forbear all cleansing for the sake of mud; to let all aquatic weeds, and other plants, grow freely *on the banks, edges, and sides* of the canals, and to clear them in the middle only. Such a conduct would, in time, quite choak them up, and enable the farmer to keep his canals exactly to their right width. All these plants covering the spaces, which, in canals often cleaned, are bare earth or mud, would be very beneficial towards preventing and decomposing that noxious, and mephitic, and inflammable gas, always issuing from such mud, which is so pestilential to animals, yet so salutiferous to plants; for mud, covered with plants that are ready to feed on its exhalations, is much less mischievous than

than that which is exposed to the rays of a burning sun. Count Carlo Bettoni, of Brescia*, has practised a method which acts on similar principles; namely, that of burying or fixing willows or poplars to the sides of the rivers whose banks he wanted to preserve, with the precaution only of keeping the ends of the branches out of water; he finds, that they grow vigorously in this situation, and, by stopping the mud of the current, form a solid bank: this, on a small scale, might certainly be executed; also in the canals of irrigation, as it has been remarked, by the author already quoted, in the *Atti di Milano*.

VENETIAN STATE.—*Vaprio to Bergamo.*

There is a mixture of watered meadow in this line, but the quantity is not considerable. In some which are old, I found a good sprinkling of *trifolium repens*, *chicorium intybus*, and *plantago lanceolata*; but also much *ranunculus* and rubbish. In the plain close to Bergamo, they clean the irrigation-ditches at the end of November, and harrowing them with a faggot, to thicken the water, let it immediately on to their meadows, which is said to enrich them much.

To Brescia.

The Venetian State, thus far, is a considerable falling off from the Milanese, in respect to irrigation; the country is not without canals, but neither the number, nor the importance of them, is to be compared to those of Milan. From Coquillio to Brescia, there are many channels, yet the lands are not half watered.

Brescia to Verona.

The road passes, for some distance, by a very fine canal, yet the quantity of watered land in this route is but inconsiderable. Before we arrive at the Lago di Guarda, there are a few meadows, never ploughed, that have a good appearance; but none from the lake to Verona. On the whole, these forty miles, for want of more irrigation, are not comparable to the Milanese or to Piedmont. This route, so much to the north, gives the traveller an opportunity of seeing a chain of considerable cities, and of observing the effects of one of the most celebrated governments that has existed; but a better direction for me, would have been by Cremona and Mantua.

* *Pensieri sul Govern. de Fiumi.* Brescia, 1782.

Verona.

The meadows here are cut thrice, and fed once; are never ploughed, if good and well watered. Water for irrigation here, as in all Lombardy, is measured with great care and attention, by what is called the quadrata, which is a square foot (the Veronese foot is to the English about as twenty are to twelve). Twelve quadrates are sufficient to water five hundred campi of rice-grounds (about three hundred and eighty English acres), and the price of such a quantity of water, is commonly about three thousand *zecchini* (1425*l.* sterling). The wheels in this city, for raising water for irrigating the gardens, are very complete; they receive the water, as in Spain, into hollow fellies. There is one in the garden of the Daniele monastery, for watering about four campi, which are said to yield a revenue of three hundred *zecchini*; which is one hundred *zecchini*, of *qs.* 6*d.* per English acre. The wheel raises the water about twenty-five feet, receiving its motion by the stream; a low wall crossing the garden, conveys the water in a trench of masonry on its top; and a walk passing along the centre of the garden, the wall there is open, to admit the path; the water sinking in a syphon, and rising on the other side, to the same height, passes again along the wall, in the same manner as canals are carried under roads in Piedmont, &c. The wheel has double fellies, for giving water on both sides into troughs, which unite in the same receiver, and the washers for giving the motion are placed between the fellies. The whole apparatus, complete, cost three hundred *zecchini*.

To Vicenza.

There are in this tract of country, some perennial meadows watered, quite upon a level, which have a very good aspect: the existence of such should make us question the propriety of the Lodizan system of ploughing, where water is so regularly at command.

Padua.

The country, from Vicenza to this city, is not watered, like many other districts of Lombardy. The practice is very well known; and there are rice-grounds about Padua, but not nearly the use made of water which is found in the Milanese; yet the rivers in the Venetian State belong to the Prince, as well as in other parts of Italy, and water is consequently to be bought; but there is not the same right to conduct it at will, and consequently the water itself might almost as well not exist.

To Venice.

In this tract I saw no irrigation, though the whole is very low, and quite level.

Venice.

Venice.

The same admirable law, that takes place in the Milanese, for enabling every man to conduct water where he pleases, is found in the Venetian state also, contrary to my information at Padua; but so many forms are necessary, and the person who attempts it, must fight his way through so much expensive litigation, that it is a dead letter, and nothing done in consequence. I was farther told, that it is a principle of the Venetian code, that not only all rivers, but even springs, and rain itself, belongs to the Prince: an idea worthy of this stern and tyrannical government.

ECCLESIASTICAL STATE.—*Bologna.*

I saw no watered lands.

TUSCANY.

I saw no irrigation in Tuscany; and, from the intelligence I received, have reason to believe, that the quantity is not considerable; some meadows, however, are watered after mowing. The best meadows I heard of, are about Poggio, Caiana, Villa Sovrana, ten miles from Florence.

DUTCHY OF MODENA.

The quantity of irrigated land in the Modenese, is but small; it does not amount to more than six biolche in eighty, nor have they more than fifteen perpetual water-mills in the whole territory. From Modena to Reggio, there is a sprinkling of these meadows, the canals for which, taken from the Lecchia, are not large; all, whether watered or not, are manuring, with black well rotted compost, and have a very neat countenance.

DUTCHY OF PARMA.

The country from Reggio to Parma, is not without watering, but the quantity is inconsiderable; there is, in this line of country, a great inferiority to that from Modena to Reggio; not the same neatness nor attention, in any respect; there are mole-casts in the meadows, a thing unseen before; and though there are much cattle and sheep, yet the features of the husbandry are worse. From Parma to Firenzuola, not an hundredth part of the country irrigated, yet there is a good deal of grass, and in some places in large pieces.

PIEDMONT.—*Pavesa, &c.*

For some miles in the Sardinian territories, there are a good many meadows, but very few watered. I passed two small channels of irrigation, but the quantity

tity was inconsiderable. If a map of these countries be examined, there is the appearance of many rivers descending from the Appenines, and falling into the Po, but the use made of them is small. It is remarkable, that all the way by Tortona, Alexandria, &c. to Turin, the quantity of irrigation, till almost close to the last mentioned city, is quite inconsiderable, not one acre, perhaps, in a thousand. What an idea can be framed of Piedmont, by those who pass through it from Mont Cenis, and quit it for Milan or Tortona, without seeing it from Turin to Coni?

SAVOY.

In the mountains of the Alps, by Lanesbourg, &c. they mow their watered meadows once only, but in the plain twice.

From this detail of the irrigation of Lombardy, it must be apparent, that, for want of laws similar to those which take place fully in Piedmont, and the Milanese, and partially in the republic of Venice, no such exertions are ever likely to be made in a free country. We can in England form no navigation, or road, or make any trespass on private property, without the horribly expensive form of an act of parliament; we cannot even inclose our own property, without the same ceremony. Nor is it only the expence of such applications, but the necessity of them generates opposition at every step, and a man must fight his way through country-meetings, through attorneys, agents, council, witnesses, and litigation,—in a manner odious to every liberal feeling, and at a ruinous expence, before he is at liberty to improve his own estate, without any detriment to others: every idea of such works, therefore, in England, as we have seen common in Lombardy, is visionary and impracticable; and we must continue to view, with eyes of envy and admiration, the noble exertions which have been made and perfected in that country, and which, in truth, very much exceed any thing we have to exhibit in any walk of agriculture in this island:—an example to hold up for imitation, and an ample field of practical study.

SECT. II.—OF CATTLE.

PIEDMONT.—*Nice to Coni.*

In this part of the Alps, the breed of cows resembles the Alderney, in horn, colour, and size. They are usually cream-coloured, or pale yellow, but with black around their eyes; black tail, and some of them legs also; like the Poictou breed in France.

Turin.

Price of a plough ox, 150 liv. to 300 liv. A good cow, 110 liv.

The method of fattening, in the plain, the cattle called *moggie*, from the mountains of Suza and Buffolino, as given by the Agrarian Society, deserves attention. They begin, by putting them in airy stables, healthy, and well lighted; bleed once or twice; anoint the bodies of the cattle; dress them well at least twice a day; give water mixed with rye-flour; in the evening, feed with a certain mixture called *condut*, composed of elm-leaves, with some hay of the second or third cut, or clover-hay; to which they join a mess of well pulverized walnut-oil-cake; on this mixture they pour some boiling water, well salted, and stir up the whole together; and mixing, at the same time, an ey-mena of bran, according to the number of *moggie*; the pap, thus prepared, is turned into a tub, and, some hours after, it is given to the cattle, who eat it with an avidity that marks a delicious food; continuing this method some time, they cast their hair, grow smooth, round, fat, and so improved, as to sell frequently at double the price*.

MILANESE.—*Milan.*

Examining the ox-stalls of a farmer near the city, I found his standings $6\frac{1}{2}$ feet wide, and made almost like my own at Bradfield; except that, instead of a step and gutter, he has a trench at their heels, in the Dutch method. I thought the house too close and hot; yet there were air-holes, but all stopped, the farmer saying, that a cow gives more milk for being kept hot; but in summer the sheds are open, and quite cool. They begin to work their oxen at four years old, and continue till ten, sometimes till twelve, but after ten they do not fatten so kindly. They all draw, as in Piedmont, by the withers; fine ones sell at thirty louis the pair. A pair will draw 4000 lb. of hay, each pound 28 oz. on a waggon that weighs 1000 lb. more, with wheels not three feet high, and

* *Memorie della Società Agraria*, vol. i. p. 73.

wooden axles. 4000 lb. at 28 oz. Milanese, are 6777 lb. at 16 oz. English; and three ton being only 6720 lb. this is a considerable load, in such a vehicle, and should imply no bad method of drawing, yet I cannot like it so well as by the shoulders. They are never shod, except on stoney hills.

This farmer fattens his oxen in winter with lintseed-cake, giving 5 lb. or 6 lb. a day to each beast, and as much hay as they will eat; the best for them, that of meadows not watered. When it is scarce, they substitute forage of maiz, sown thick for mowing; and this hay they cut in a chaff-box, to the length of one or two inches.

But the great object in the vicinity of Milan, as well as in the Lodizan, &c. is the dairy; I viewed several considerable ones, from four to seven miles from the city, and had my inquiries very satisfactorily answered. Some of the particulars deserve noting, for I should remark, that all the dairies of the Milanese are very famous; and few produce cheese, that is not sold under the general name of Parmesan. They buy in, about the end of October, Swiss heifers, with calf, generally at two years and a half old, under contract, that if they do not calve, or do not give milk from four teats, the bargain is void; the price, on an average, 13½ louis. They keep so long as till fifteen years old, or so long as they breed. Till the age of six years, the milk augments annually, but afterwards diminishes. They are sold lean at 15 to 36 crowns each, 6 liv. (at 8d.) The best two or three cows, in a dairy of forty or fifty, will give thirty-two bocali of milk per diem; but, in common, twenty-four, or eighteen English quarts. The cows are mostly of a dark brindled red colour, with small horns*; and it deserves noting, that the best made cow in fifty-five, *quasi* fattening, was the best milker.

In respect to cheese, a dairy of fifty-five, which I viewed, make three hundred and twenty in a year, at 40 lb. on an average, or 12,800 lb. or 232 lb. per cow (380 lb. English), at 90 liv. per 100 lb.; in all, per cow, in cheese, 7l. 10s. English. The butter amounts to 12 lb. to every cheese of 40 lb. at 26s. per lb.: 3840 lb. which, at 26s. are 4992 liv. (166l. 8s. English, or, per cow, 3l.) The calf, at eight to fifteen days, sells at 72 liv. per 100 lb. nett, and being weighed alive, 28 lb. per 100 lb. is the deduction. I do not clearly understand this note, on revision, but as veal at Milan is about the same price as in England, I shall call the calf 10s. To fifty-five cows, seven sows and a boar are kept, which breed forty hogs that are reared; twenty fold in spring, and twenty in autumn, average 1½ louis each; in all for hogs, 60l. English.

* It is remarked by an Italian writer, that in chusing cattle, the horns must not be overlooked; the larger these are, the worse. The Swiss cows that are reputed the best, have small horns; and, on the contrary, those of Sardinia, that are poor milkers, have very long ones. *Elementi D'Agricoltura di Mitterpacher*, tomo ii. p. 257, notes.

	£.	s.	d.
Recapitulation, per cow.—Cheese, - - -	7	10	0
Butter, - - -	3	0	0
Calf, - - -	0	10	0
Hogs, - - -	1	2	0
	12	2	0

The account of a dairy taken next door to me, in Suffolk, is complex, and such as not one man in twenty keeps accounts particular enough to ascertain; it may, therefore, be easily supposed, that greater difficulties occur in a foreign country, through the medium, not only of a different language, but of different manners and customs. This account was given partly as an actual one of fifty-five cows, and partly by calculation; but in such a number of cows, there will be some dry; there will not be fifty-five calves sold from fifty-five cows; hogs must, for such a produce, have some corn given them, though not much; and I should consider this estimate rather as what a good cow ought to do, barring accidents and exceptions, than as a fair average of a large number.

The expences, however, are high, as well as the produce; among others, there are the following to this dairy of fifty-five:

	liv.
Chief dairy-man, the <i>cazaro</i> .—Wages, - - -	130
Five moggii of maiz, at 20 liv. -	100
One ditto wheat, at 34 liv. -	34
Half ditto rye, at 18 liv. -	9
One ditto of white rice, - - -	44
One hog, of 120 lb. at 15s. -	90
Lodging, fuel, salt, and butter,	
The under dairy-man, <i>sotto cazaro</i> .—Wages, - - -	127
Board in the farmer's house,	
Three men, at 70 liv. each, -	210
3½ moggii maiz, at 10½ liv. -	210
½ ditto rye, at 3½ liv. -	63
¼ ditto rice, at 2¼ liv. -	99
½ ditto mullet, 1½ liv. at 18 liv. -	27
Towards board, 20 liv. -	60
Land enough for their flax,	
Two children, for the hogs, at 30 liv. -	60
Five faggots per diem, at 5 liv. the 100,	
4 liv. if large, - - -	60
	1323
	Here

Here are above 44l. English, without knowing at what to calculate the three other articles; probably they would raise it to above 20s. a cow. There is likewise the wear and tear of the dairy implements, salt, oil, and many small articles; besides hazard, and the loss by difference between the sale of old cows and the purchase of young. In regard to the management of the cows, they eat in winter, that is, from the middle of December to the end of March, nothing but hay, and the allowance is 21 lb. of 28 oz. each cow, per diem; this is 2184 lb. of Milan, or 3559 lb. English, or about 1½ ton. This single article of expence, without any other consideration, would make a very great produce necessary, or the farmer could not live. They milk at break of day, and sometimes before it: in the evening, two hours before sun-set: the quantity most in the morning. The best cheese is made when the cows feed on white clover, which comes of itself the second year, where red clover was sown, which occasions a vulgar notion here, that red clover changes into white. This second year's white clover is better than perennial meadows for cheese. For one fortnight in a year, they foil their cows,—the last half of March,—and the grass goes thrice as far as when eaten in the field; yet they never do it at any other season. The most singular circumstance, is that of their stalling their cows, to empty racks, most of the day and all the night: they are turned out at eight or nine in the morning, for three or four hours, and all the rest of the twenty-four they have nothing. I inquired particularly into the motives for this very extraordinary practice, and was assured, it was necessary to make good cheese; as without it, the milk would not have the requisite richness. During some seasons of the year, and in very wet or bad times, they give them, during this fast, a small quantity of hay; but the practice is confined to such times, and is an exception from the general rule, which is decidedly that the cows must not eat grass at pleasure. It is so very singular a practice, as certainly to deserve experiment in England. The French practice, of milking thrice a day, is quite unknown.

The method of making the cheese known in England by the name of Parmesan, because the city of Parma was once the *entrepot** for it, was an object I wished to understand as well as possible. The idea is, that all depends on soil, climate, and irrigation; and the boasted account, that the Kings of Spain and Naples, in order to make similar cheese in their territories, at least for their own tables, had procured men of skill from the Milanese for this purpose,—contribute to give a readiness every where in answering questions, as they are all very well persuaded, that such cheese can be made no where else.

* This is the general opinion, but a late writer has shewn that it is an error, and that Parma and Piacenza were once the country in which the best was made.

In order that I might view the process to the best advantage, the Abbate Amoretti conducted me to the dairy in question, belonging to the house of Leti. It is, in the first place, necessary to observe, that the cheeses are made entirely of skimmed milk; that of the preceding evening, mixed with the morning's milk: the former had stood sixteen or seventeen hours; the latter about six hours. The rennet is formed into balls, and dissolved in the hand in the milk; the preparation is made a secret of, but it is generally known, that the stomach of the calf is dressed with spices and salt. The rennet was put to the milk at twelve o'clock, not in a tub, but in the cauldron or boiler, turned from off the fire-place at ten o'clock; the heat 22 degrees of Reaumur's thermometer, and common to 24 degrees ($81\frac{1}{2}$ Fahrenheit's), the atmosphere being at the same time $16\frac{2}{3}$ (70 Fahrenheit's). In summer, the whole operation is finished by eight in the morning, as the heat fours the milk if in the middle of the day. At one o'clock the cazaro examined the coagulation, and finding it complete, he ordered his sotto cazaro to work it, which he did, with a stick armed with cross wires, as described in *Annals of Agriculture*; this operation is, instead of cutting and breaking the curd, in the manner it is done in England, free from the whey. When he has reduced it to such a fineness of *grain* as satisfies the cazaro, it is left to subside, till the curd being quite sunk, the whey is nearly clear on the surface; then the cauldron which contains it, is turned back again over the fire-hearth, and a quick fire made, to give it the scald rapidly; a small quantity of finely powdered saffron added, the sotto cazaro stirring it all the time with a wired machine, to keep it from burning; the cazaro examined it, from time to time, between his fingers and thumb, to mark the moment when the right degree of solidity and firmness of grain is attained. The heat was 41 deg. ($124\frac{1}{2}$ Fahrenheit), but it is often 44 ($131\frac{1}{2}$ Fahrenheit). When the cazaro finds it well granulated by the scalding, he orders his deputy to turn it off the fire; and, as soon as a certain degree of subsidence has taken place, empties about three-fourths of the whey, in order the better to command the curd. He then pours three or four gallons of cold water around the bottom of the cauldron, to cool it enough for handling the curd; then he bends himself into the vessel, in a formidable manner, to view it, resting his feet against the tub of whey, and with his hands loosens the curd at bottom, and works it into one mass, should it not be so already, that it may lie conveniently for him to slide the cloth under it, which he does with much apparent dexterity, so as to inclose the whole in one mass; to enable himself to hoist it out the easier, he returns in the whey, and taking out the curd, rests it for ten minutes or a quarter of an hour in a tub to drain. The vat, in the mean time, is prepared in a broad hoop of willow, with a cord round to tighten it, and widens or contracts at pleasure, according to the size of the cheese. Into this vat the curd is fixed, and the cloth folded
over

over it at top, and tucked in around. This is placed on a table, slightly inclining, to carry off the whey that drains from the cheese; a round plank, three inches thick, shod with iron, like the block-wheel of a barrow, is laid on the cheese, and a stone about thrice the size of a man's head on that, which is all the press used; and there ends the operation. The cheese of the preceding day was in a hoop, without any cloth, and many others salting in different hoops, for thirty or forty days, according to the season,—thirty in summer and forty in winter. When done, they are scraped clean, and after that rubbed and turned in the magazine every day, and rubbed with a little lintseed-oil on the coats, to be preserved from insects of all sorts. They are never sold till six months old, and the price 90 liv. the 100 lb. of 28 oz.

The morning's butter-milk is then added to the whey, and heated, and a stronger acid used, for a fresh coagulation, to make whey-cheese, called here *mascho-pino*. Little ones are kept in wooden cases, in the smoke of the chimney.

Upon this detail I am to remark, that the rules that govern the operation of making cheese in the Milanese seem to be very different from those which are attended to in England. These are marked distinctions:

- I. Starving the cows during so large a portion of the day.
- II. Breaking and scalding the curd.
- III. Light pressing.

The mode of feeding, which these farmers pursue, they think essential to good cheese; and that if the cows were allowed to pasture all day long, it would be difficult, perhaps impossible, to make cheese of equal goodness. It would be idle to reason upon a proposition, which demands in other countries experiment alone.

The breaking of the curd and scalding is absolutely different from ours, and apparently a method infinitely superior; our breaking by the hand, and cutting into cubes and other ways, are gross, and render it difficult for the scalding whey to operate equally; but in the Italian method it is broken minutely; and, by keeping the heating whey constantly stirring, the scald is equal throughout; and, operating on the minutely divided curd, must take a more regular and a greater effect. I described to the cazaro the method used in England, and asked his opinion, on which he replied—"Il vostro formaggio in quel modo non puol'essere troppo buono: come è la grana?" By referring to the grain of the cheese, it is plain he thought that the texture of it demanded this way of operating.

In regard to pressing; all with whom I conversed were much against any very heavy weights; and seemed of opinion, that a good cheese might be pressed

pressed into a bad one. Firmness, weight, and solidity, they contended, should arise from the right fabric of the cheese, and from adapting the fabric to the land and to the season, but never from much pressing, which would be a bad way of remedying either evils or mistakes. Hoved cheeses are very rare with them, which may possibly proceed not only from the granulation given by their method of scalding, but also from their moderate pressing. However it must not be imagined that the excellency and peculiarity of Parmesan cheese depend altogether upon the fabrication; their own idea is probably very just, that soil, climate, and irrigation come in for their share; and that the abundance of certain plants has an influence; but this last cause will not have much stress laid on it, since clovers are found to be the chief plants.

I shall not quit this most interesting district, without recommending it strenuously to those who would wish to give themselves a completely good farming education. For such a purpose, Codogno would be a proper station; for it is surrounded by great dairies, and contains the largest magazines of cheese of any town in Lombardy; the consequence of which is, a regular intercourse with all the dairy masters of the Lodizan. Much useful knowledge might here be gained in irrigation, and in making cheese.

The oxen of this dairy farm begin to work at four years old; and are sold at eleven or twelve years old, for 9 to 12 louis each. A pair will plough eight pertiche a day; and draw, waggon included, 3000 lb. of 28 oz. twenty miles.

Mozzata.

They practise a singular method of fattening oxen here. They put chopped straw, a little hay, the leaves of maiz, and also some flour of it, into a tub, and pour in hot (not boiling) water; and as they give this soup to the beast, they add for each a handful of oil-cake in powder, or, for want of that, of elm leaves in powder; oak leaves they give green. Another food in use is, powdered acorns, which is given instead of oil-cake, and with good success.

Lodi.

The cows here are generally of a blood red colour, long, lank, and ill made. In a dairy of ninety, they make, for one hundred and sixty days, one cheese a day, of 60 lb.; but in April and May it is of 70 lb. After St. Martin, the beginning of November, greater, but not every day: in seven months, 190 cheeses; and in the rest of the year, 170; in all, 360; this is 240 lb. per cow. In feeding, they give the cows nothing from four in the afternoon till nine the next morning, unless the weather be very bad, and then a little hay. In making the cheese, I found very little variation in the practice from that already described.

scribed. For the coagulation, or what our dairy-wives call *setting*, they heat the milk gradually, and take care not to do it too much at once. In the great heats of summer, they set it without heating, and even put ice or snow (with which every dairy is provided) to cool it; but they do not consider the heat at setting to be a point of much consequence, as a little more or less heat makes no difference. The curd is broken exactly as described before, with two machines, one of wood only, the other armed with fine wires, and the saffron added during that operation. Scald it as at Milan, and, upon doing this with skill, they assert, that much depends; as by more or less scalding they can remedy certain deficiencies in soils and plants. The rest of the operation is just as already described, and all the utensils the same; the weight something less than at Milan; and here as great enemies to much pressing. The cheese made yesterday is all honey-combed in the coat, and as yellow as wax, a pale yellow; whereas at Milan the new cheeses are quite white. These honey-combs wear out by scraping after salting, which is for thirty-six or forty days; they are then coloured, and there is given to them an appearance of a whitish crust, or efflorescence artificially. They are preserved by oiling, as at Milan. Good cows give about five gallons of milk per diem; the best of all six. Sixty cows require 100 pertiche for six months in summer.

Codogno.

The produce per cow is here reckoned at 100 lb. of cheese*, at 28 oz. at 22½ f. per lb. and 80 lb. of butter, at 24 f. The calf sells at 20 liv. at fifteen days old; and the produce of hogs, 12 sows to 100 cows, which pay about 10 liv. per cow.

<i>Milanese.</i>		<i>Sterling.</i>		
	liv. f.		£.	s. d.
100 lb. cheese, at 22½ f.	112 10	—	3	15 0
80 lb. butter, at 24 f.	— 96 0	—	3	4 0
Calf, — —	20 0	—	0	13 4
Hogs, — —	10 0	—	0	6 8
	<u>238 10</u>		<u>7</u>	<u>19 0</u>

Thirteen pertiche of land are necessary to carry a cow through the year, which they cut for hay thrice, and feed once. Such land bought, sells at 300 liv.

* This is the general idea; but let it be noted, that the particulars of two dairies I took, one of which was near Milan, were different; one 232 lb. per cow; the other, near Lodi, 240 lb. per cow; yet there is, near Milan, a notion, that the produce is 100 lb. per cow. The difference, probably, is this, that upon a general calculation of all the cows of a district, good, bad, and indifferent, dry and giving milk, the quantity is 100 lb.; but in certain capital dairies, and reckoning only the cows in milk, it is more than double.

and

and lets at 10 liv. The greatest dairy in the country, 110 cows, and the price ten louis each. In summer, they milk at four o'clock in the morning, and at sun-set. Make the cheese at eleven in the forenoon; in winter at any time. Skim all the milk, and never set it for coagulation without heating it by fire. In other respects, the manufacture is conducted as already described. They colour the coats with earth, and the whitish efflorescence is given with rye-meal. When the grass is oldest, it always gives the best cheese, but the produce, after being down four years, declines so much, that the almost general practice is to plough it.

View the magazines of cheese, at Codogno, of Sig. Bignami, and of Sig. Stabilini;—the latter are immense. Most of it is sold in Italy, much in Spain, and least of all in France; there is not a solid cheese in that kingdom that is eatable, and yet they consume little Parmezan!

Codogno to Crema.

Messrs. Bignami had the goodness to conduct me to a great farm, two miles from Codogno, in the way to Crema;—here I found, that coagulation takes, according to the season, from one to four hours; in some parts of the Milanese, the cazaro informed me, that they *set* the milk without warming; here never; always heat it by fire. The *caggio* (rennet) is in balls about twice as large as a pigeon's egg, put in a linen coarse cloth, and rubbed, holding it in the milk, till it is dissolved. In this dairy, after three hours coagulation, the milk was as hot as if fresh from the cow. Quantity of saffron, $\frac{1}{4}$ oz. to a cheese of 60 lb.—945 lb. of milk, of 28 oz. make a cheese of 60 lb. weighed six months after. The same quantity of milk, in spring and in autumn, makes more cheese than in summer. Best and most from old grass, but a cazaro who really understands his business, will make all alike; and the idea here is, that fabrication is all in all. A cheese of 30 lb. will be as good as one of 100 lb. The scalding, in their manner, is to granulate the curd, and, united with so small a pressure, leaves cavities in the texture of the cheese, that fill with an oleaginous liquid, and form the peculiar excellence of Parmezan cheese. With the methods used in England, such cavities spoil a cheese. I must, however, remark, that such Parmezan as was common many years ago, in which these cavities and their contents were of a texture that would allow of drawing out like a thread of glue, is not so common now. The solid cheese, without cavities, common at present, is not much better than our North Wiltshire, and is apt to dry much sooner, if equally kept. *Quere*, if this declension of quality is not to be imputed to their ploughing all the country? When their cheese gained its great reputation, it was made from old meadows; now, all is from arable land. Here it is kept five or six years,—never till ten. Walking with the farmer,

the master of eighty cows, into his fields (1750 pertiche), I begged him to pick the plants in the order of his estimation for cheese, which he did;—first, *trifolium repens*; second, *trifolium pratense* and *plantago lanceolata* equal; third, *chicorium intybus*. These he esteemed capital. The *ranunculus repens* bad; all the grasses, properly so called, bad, on comparison with those above; but *lolium perenne* the best, if it come naturally; bad, if sown. *Gallega officinalis* bad. They sometimes do not sow any thing to make a meadow, leaving the wheat-stubble to cover itself; a barbarous practice, since they confess, that in the first year it yields little. There were dung-hills in most of the fields, well mixed and rotten, to be spread in winter. Feed the cows, in winter, only with hay, and 20 lb. of 28 oz. the daily allowance; the price now 7½ liv. per 100 lb. I forgot to remark, that all the milk-trays are of copper; and that ice is in every dairy, to put into the churns with the cream. The cows are here fed, as every where else in the Milanese, but a few hours in twenty-four; yet longer than in some districts, for they are abroad seven hours; they eat nothing while tied up in the sheds.

In 1733, there were in the Lodizan 197 dairies: in 1767, there were 236, each of which had 120 cows, on an average, making 290 cheeses each dairy per annum; in thirty-four years, increase—39 dairies, 4680 cows, 11,310 cheeses, and value 848,210 liv.* This is Count Carli's account, but I suspect an error†, as I heard no hints of any decline; and at Codogno, the dairies were calculated for me, apparently with attention, at 213 each, making 310 cheeses in a year, or 66,030 cheeses, of 50 lb. each, or 3,301,500 lb. of 28 oz. at 1 liv. a lb.; this makes 110,047l. and the account I received was, that, of this quantity, two-thirds were exported.

In regard to the origin of this cheese, it deserves notice, that it is not three centuries since this great advantage of irrigated meadows has been here known; and I may observe, that the Cistercian monk who has written so well—*Sull'Irrigazioni de Prati*, in the *Atti della Societa Pat. di Milano*, seems to admit, that the original manufacture of Parmezan cheese was in the territory of Parma; and refers to original papers for shewing, that Milan was supplied, three centuries ago, with this cheese from Parma. A clearer proof of this cannot be produced, than that in the ledgers of the monastery of Chiaravalle, there are entries of the purchase of cheese from Parma, which, most assuredly, could not have taken place, if such cheeses had been made at home. And this seems to be confirmed by the account of the entry of Louis XII. into Pavia, in 1499, given by Francesco Muralto, juris consulto of Como, who says,—“ Multa

* Carli, tom. i. p. 317.

† It must be a gross error to calculate the dairies at 120 cows, on an average; for in all my inquiries, I heard but of one that reached 110.

fuere per Papienses dono Regi tradita et inter cetera formæ centum casei Placentinæ civitatis." It is also worth observing, that though they did not make good cheese at this period (as we may judge, from their buying it elsewhere), yet some cheese was made at Tecchione, a farm belonging to them, of the weight of 14 lb. per cheese, as it appears by their ledgers for the year 1494*.

Venice.

This city is supplied with beef from Bosnia, Carinthia, Styria, and Hungary: at present the export from those countries is prohibited, on account of supplying the Emperor's armies in Hungary. Mutton from Dalmatia and Bosnia.

ECCLESIASTICAL STATE.—*Bologna.*

In their cow-houses they have the same step at the heels of the beasts as I have in my own, and which I copied from Mr. Bakewell many years ago; but they have applied it to their horse-stables also, which I never met with before; yet it is an obvious improvement, which well deserves imitation. The floors of their stalls are level.

TUSCANY.

Though the quantity of cattle of every kind in this country is much inferior to what it ought to be, yet is the art of fattening an ox well understood. In summer they feed on mown clover and *saggina* (the great millet, *holcus sor-gum*); also on maiz, and a mixture of all sorts of corn and pulse, called *farrana*. Price of an ox, 45 scudi (at 5s. 8d.); a cow, 30; a sheep, 1; a horse, 20; a hog, 7.

Account of a Dairy of Eight Cows, at Villamagna, in Tuscany, belonging to Conte Orlando del Benino.

	Scud.	liv.	s.
Eight cows cost	85	2	0
Produce, first year, in butter and milk,	83	4	2
Second year, value of the cows and 3 calves,	92	3	4
Produce.—Calves,	44	3	15
Milk and butter,	78	6	9
	127	3	4
Cheese,	3	0	4
Value of the cows,	84	3	4
	214	6	12

* *Atti*, vol. ii. p. 220, 221.

<i>Expences.</i>		<i>Scud.</i>	<i>liv.</i>	<i>s.</i>
Value of the cows,	- - - - -	92	3	4
Dairy-man,	- - - - -	12	0	0
Bran and bull,	- - - - -	6	5	4½
Saggina and clover sown for them,	- - - - -	3	0	0
Profit,	- - - - -	100	5	3½
		214	6	12
Which, on 8 cows, is per cow,	- - - - -	12	10	8
At 5 liv. 15s. the dollar, and 47d. a dollar sterling,	- - - - -	£. 3	3	6
Which is per week,	- - - - -	0	1	3

In which experiment almost the whole of this was profit, because no fewer cattle of any other sort were kept; but it must be obvious, that 1s. 3d. a week is, according to our ideas, a very poor return for keeping a cow*. I copy this account from Sig. Paoletti, with whom I had the pleasure of conferring personally on agriculture, and who informed me, that at Villamagna they begin to work their oxen at two years and a half old; they change some every year; and gain by their improvement, while worked, about 6 scudi (of 5s. 8d.) the pair, on an average, per annum; buy at 70 scudi, and sell at 76. Cows give two fiasce of milk per diem, during eight months; price 4s. each.

MODENA.

Register of all the live-stock in the Dutchy of Modena, taken in June 1771:—Oxen, 42,615; cows, 61,445; calves of one year, 24,172; calves, 21,326; horses, 8,313; mules, 836; asses, 11,543; hogs, 137,326; sheep, 329,015; goats, 35,518. Augmentation in the rest of the year; great cattle, 12,000; small, 38,000.

PARMA.

Many and great dairies in the Parmezan; some to sixty cows, and numbers from twenty to thirty; and those who have a few cows, carry their milk to some neighbouring dairy, and receive cheeses in proportion to the quantity; but this cheese has not the reputation at present of being so good as that of the Lodizan. As this country gave its name to the best cheese in Europe, and once certainly made the best, I was desirous of knowing how far the mode pursued in the manufacture, differed here from that of the Lodizan: in the dairy of a

* *Pensieri*, p. 233, 236.

farmer of the Count de Schaffianatti, I had this opportunity. The apparatus is nearly the same, except that the stick with which the curd is broken, and which in the Lodizan is armed with cross wires, is here only a bush, the branches of which are drawn a little together by a string; this is not so effective as fine wire, and is a variation in a point of importance in giving a fine *grain*. I have remarked already, that the board which in pressing is laid on the vat, is in the Lodizan one and a half or two inches thick; here it is five or six inches, and heavy; and the stone used to press it four or five times larger, yet the cheeses here are not often more than half the size of the others; this variation, in a circumstance that cannot be unessential certainly deserves notice; if so very light a pressure in the Lodizan is given, the cheese which is superior to all others, it undoubtedly should lead the farmers of Parma to examine whether the inferiority of their cheese does not arise wholly or in part from these variations; the country, it is true, is not watered to one-tenth of what the Lodizan is, and the cows feed in perennial meadows, instead of the pasturage of arable land. The trays here are of wood, instead of copper for the milk; and it is skimmed, as at Lodi, before making the cheese. The coagulation is made usually in three quarters of an hour, if the milk be what they call wholesome; that is, if it have no particular quality that demands a variation, in which case it is coagulated in half an hour: they vary the scalding also; for bad milk they scald with a fierce quick fire, but good is done more gently. In managing the lump of curd, when settled to the bottom of the boiler, they vary also; they press it with a circular board, fixed at the end of a stick or handle, and then get a milk tray under it; and when they have hoisted it out, they leave it to drain in that tray about half an hour; at Lodi, ten minutes, or at most a quarter of an hour. The common price of the cheese 30 liv. (2½d.) the peso (22 lb. English.) I tasted it at the table of the Count de Schaffianatti, and also at Parma; and the inferiority to the Lodizan is great.

The attention of giving salt to cattle and sheep here, as in every other part of Italy, is regular: they even consider a plenty of salt as somewhat essential to having proper stocks of those animals; and gave me an instance, which is remarkable. In the Courti di Monchio, a valley in which the bishop is the sovereign, there is no gabelle on salt, and therefore given much more plentifully to cattle and sheep; the consequence is, that the numbers of both are much greater, proportionally to all other circumstances than in any other district.

SAVOY.

They reckon, at Lanefbourg, that three goats are equal to one cow; the price here is 11 liv. or 12 liv. At Isle, in Alsace, a good goat sells from 12 liv. to 30. liv. French, in common 20 liv. Some there are so good that two equal a cow; but at Tour d'Aigues, in Provence, it takes four to equal a cow, the price 10 liv. or 12 liv. French.

S E C T.

SECT. III.—OF SHEEP.

Nice.

I here observed, what appeared very singular, a flock of sheep brought down from the mountains to drink the sea-water, which is, I suppose, to save salt. The gardeners near the town generally keep a few sheep, confined in sties, just as hogs in England, and fed with the offal of the garden. I took a specimen of the wool of one of these stie-fed sheep; more like goat's-hair than wool; it sells at 6*s.* the lb.

Turin.

The price of sheep from 10 liv. to 15 liv. The fleece is 8 lb. at 5*s.* unwashed.

MILANESE.

Throughout this country I scarcely saw any sheep, and those few bad.

VENETIAN STATE.—*Bergamo.*

Here I met a flock; an ugly breed; large, long, and ill made; without horns; the wool coarse and hairy; large hanging ears; and their throats swollen almost like wens. They have a fabric of woollen cloth here, but the wool comes from Apulia.

Brescia.

The fleeces here are 4½ lb. (about 2½ lb. English,) and sell at 25 liv. to 30 liv. per peze, not washed, which is about 1*s.* English the pound.

Verona.

Price 30*s.* the lb. of 12 oz. (1*s.* the pound English.)

To Vicenza.

Meet several flocks; all are clipped twice a year; the breed polled, and much like those, but not so large, as on the other side of Verona.

Vicenza.

The sorts of sheep known here, are *Gentili*, which live only in the plain, not being hardy enough to resist the mountain cold; their wool is longer than of the other sorts. *Tosetti*, these resist the cold well; have short wool, clipped twice.

twice. *Monte Padouana*, are of a much greater size; the flesh excellent; are clipped twice. Price of wool, $2\frac{1}{2}$ liv. per pound unwashed (the ounce of Vicenza, 12 to the pound is to the English ounce as 690 is to 480, as I found, by buying an ounce weight there); this price is equal to about 11d. the English pound. It is remarkable, that they here feed their sheep in winter, with a mixture, made in a hole in the ground, trodden well in, of *zucca* (gourds) cut in slices; the marc of grapes, vine-leaves, and green grass.—Price of wool here:—*Gentili preparata*, 6 liv.; *Gentili non preparata*, 5 liv. 5s.; *Tosetta*, 5 liv. to 6 liv.; *Tefino*, 2 liv. 10s.; *Padouana*, 4 liv.; all by the pound of 12 oz. The ounce is to that of England, as 690 to 480; the pound, therefore, equals 17 oz. English.— $5\frac{1}{2}$ liv. is above 2s. 6d. English.

Padua.

Price of sheep about 2 ducats. In common they clip but once a year; fleece 3 lb.

ECCLESIASTICAL STATE.—*Bologna.*

Price of a good sheep, 14 pauls (7s.) Produce, per sheep, of a flock;—lamb, 4 pauls; wool, $3\frac{1}{2}$; cheese, 4; in all, $11\frac{1}{2}$ (5s. 9d.) per annum; half to the proprietor, half to the peasant. The wool 3 lb. at twice shearing, and at 13 baiocchi the pound (10 baiocchi to the paul, of 6d. less a fraction). It is washed on the back before shearing. There are 25,000 to 30,000 sheep in the Ferrarese.

TUSCANY.—*Bologna to Florence.*

Some flocks of sheep are scattered on the Appenines, of a small and rather pretty hornless breed. Near Florence, they cut the lambs in June, and sell them in September, to those who keep them till March. Price in September, 10 liv. (7s. 1d.) and in March for 18 liv. (12s. 9d.); there are few, or none, of two or three years old. They clip but once; weight of the fleece 4 lb. at $1\frac{1}{4}$ paul per lb.; washed before clipping (English weight and money, the fleece is 3 lb. at 1s. 1d. per lb.) Wethers are, in some places, fattened on oats, barley, and hay, and sometimes with a few raves.

Villamagna.

Thirty-six sheep kept on 483 stiori of land, each giving 3 lb. of wool (equal to $2\frac{1}{2}$ lb. English), at, this year, $1\frac{1}{2}$ paul, and last, $1\frac{1}{8}$ (the paul $5\frac{1}{2}$ d.); clipped but once a year, in May, and washed before. Each sheep $\frac{1}{4}$ of a paul in cheese. Thirty-six bring, on an average, twenty lambs, which sell, at five or six weeks, at $4\frac{1}{2}$ pauls; at six months, 7 or 8 pauls.

Two hundred sheep from the mountains, that pass the winter in the Maremma, the expence 157 scudi, composed of twenty rams, fifty ewe hoggits, one hundred and thirty breeding ewes; fifty lambs kept for stock.

	Scud.	liv.
Fifty lambs for stock, - - - - -	39	2
Eighty lambs sold, - - - - -	12	0
Wool, 7 lb. the pair, at 10 scudi the 100 lb. - - - - -	70	0
Cheese, 2½ lb. to each sheep, at 6 s. per lb. - - - - -	11	0
	132	2
Half to the proprietor, - - - - -	66	1

Expence.

Winter-food in the Maremma, - - - - -	40	0
Two hundred sheep to a shepherd; 24 stari of corn for the winter, - - - - -	12	0
Passes, charges, duties, regulated at 6 scudi the 100 sheep, - - - - -	12	0
Expences of travelling, utensils, fees, &c. - - - - -	8	0
Pasturing in summer in the mountains, - - - - -	4	0
	76	0
Half to the proprietor, - - - - -	38	0
Nett profit to proprietor, - - - - -	28	1

Which profit, being on a capital of 157 scudi, is 18 per cent*.

It is an observation of Sig. Paoletti †, that draining the Maremma, and cultivating it, have lessened the number of sheep in Tuscany considerably: great flocks, before that period, were kept in some mountainous districts in summer, and pastured in the Maremma in winter; but cultivation has changed this. He does not say that the people of the Maremma have sheep of their own, but observes, that it is a diminution in number. This is sufficient to prove, that the improvements in the Maremma have been on false and vicious principles; for, if they had been on just ones, sheep would have been increased instead of lessened.

Sig. Paoletti recommends that all sheep should have 1 lb. of salt in March, and 1 in October, which makes them healthy, and to yield more wool ‡.

* *Tramontani Dell Accrescimento Del Bestiam e Toscano*, 8vo. p. 96.

† *Pensieri*, p. 207. He mentions their being *prodigiosamente piu numerose*, a century before, p. 221.

‡ *Pensieri*, p. 208.

MODENA.

Wool here sells from 2 liv. to 3 liv. per lb. washed; equal to 12½d. per lb. English. There are many sheep in the mountains, but miserable things; clipped twice a year.

PARMA.

In going to Firenzuola, I examined the wool of a flock, and found it more like the hair of a dog than wool; and all I see, which are but few, are alike hairy; most of them polled, but some with horns; not badly made, but feel worse. These are the flocks whose wool, Mons. de la Lande says, is estimable!

PIEDMONT.—*Pavesè*.

On entering the King of Sardinia's country, and for many miles, see little parcels, of from ten to twenty-five, of poor dirty housed sheep, feeding on the young wheat. Asti was formerly famous for wool;—*nelli antichi tempi famosa per la sua lane**; but the country contains none at present, to support that character.

SAVOY.

Unwashed wool, 10s. the lb. of 12 oz.; fleece 3 lb. to 6 lb.; it goes to France or Piedmont. Sheep, 9 liv. to 12 liv. each. Though cattle and sheep are the great riches of all Savoy, yet no care taken of the breed, and the wool all bad†.

The price of wool, regard being had to that only which is long, coarse, and bad (but not the worst), may be stated in Lombardy at 1s. English, the English pound; such would sell in England, I calculate, at about 7d. or 8d. per pound.

* *Giulini*, tom. xii. p. 19.

† I may here add a minute on goats:—Marquis Ginori introduced the Angora goats into Tuscany, for making camblets, which manufacture has succeeded so well, as to be termed *rispettabile manifattura* by Paoletti. *Pensieri*, p. 220. And it is observed by another writer, that if they are not superior to the antient camblets of Brussels, they are, at least, equal to them. *Ragionamento sopra Toscano*, p. 167.

C H A P. III.

Of the Management of Arable Land.

THE minutes I took, concerning the conduct of arable land, may, for the sake of clearness, be thus divided:—1, Of the courses of crops. 2, Of seed and product. 3, Of the culture of certain plants. 4, Of implements. 5, Of manures.

S E C T. I.—O F T H E C O U R S E S O F C R O P S.

P I E D M O N T.—*Chentale.*

A year of fallow common in five or six years, during which year the land is never watered, only exposed to the sun. Wheat is sown on fallow; on clover land; always after hemp, because the land is in high order; the same after maiz, if well manured; in which case also after millet sown in June, otherwise mellin or rye. The fallow for wheat, commonly follows buck-wheat, called here *fromentin*, or millet. Clover is sown among rye in March, never among wheat. Millet de cottura is sown in June; millet de restuba the end of July, after wheat; and then dung well for hemp.

Turin.

In some arable land I viewed, a few miles from this capital, the following most extraordinary course was pursued, and was mentioned to me as being not uncommon;—1, maiz; 2, wheat; 3, wheat; 4, wheat; 5, maiz; 6, wheat; 7, wheat; 8, wheat.

The year of maiz being considered as such a preparation, as to allow of three successive crops of wheat. The practice however is barbarous. Upon the farm of Sig. Briolo, the following is the course;—1, maiz; 2, wheat; 3, rye; and when the land wants repose, clover is sown upon a small part.

Vercelli.

Upon good wheat land;—1, maiz; 2, wheat; 3, wheat; 4, rye. And in the rice grounds;—1, fallow; 2, rice; 3, rice; 4, rice. They have here an excellent practice, and it extends, more or less, over all Piedmont, which is to
mow

mow clover by the 10th of May, and to plough the land and plant maiz, which succeeds greatly after clover.

MILANESE.—*Milan.*

The arable lands never repose; but a quick succession is reaped. Two crops of bread corn are gained in one year, by sowing maiz in July, after wheat.

Milan to Pavia.

The course common in the rice grounds, is,—1, rice; 2, rice; 3, rice; 4, fallow, and dung; 5, wheat, clover sown either with it in autumn, or upon it in spring, the former best; 6, clover; 7, clover; 8, clover; 9, flax, and then millet the same year, and then rice again, as above.

Also,—1, wheat; 2, clover; 3, clover; 4, clover; 5, clover; 6, flax, and then maiz; 7, wheat, and clover again. Sometimes after flax, coleseed for oil. Another course,—1, 2, 3, clover; 4, maiz; 5, rice; 6, rice; 7, rice; 8, fallow; 9, corn, and clover.

In the Pavese.

1, Rye, and then fallowed for, 2, wheat, sown with clover in February, mown with the stubble, and then fed; 3, clover; 4, clover; 5, clover; 6, flax, and then millet, or, instead of both, maiz; 7, wheat; 8, wheat, and left then, sometimes, to pasturage under clover.

Mozzata.

A course common here,—1, clover; 2, winter-flax; 3, lupines; 4, maiz, for forage; 5, coleseed; 6, cabbages; 7, panic; 8, hemp; 9, beans. This course will be found to occupy about twelve pertiche in one hundred, and to pass in succession over the whole, for the benefit of variation. Another,—1, wheat, and millet after; 2, common maiz; 3, wheat and millet; 4, common maiz; 5, rye and quarantino; 6, common maiz; 7, rye and quarantino; 8, common maiz. The assiduity with which they avoid a fallow, deserves attention; and it is here effected, as in the South of France, by means of a plant that is asserted by many to exhaust.

Lodizan.

1, Wheat sown in October, and reaped in June, and the land ploughed thrice, and manured for, 2, wheat again, and clover, called *spianata agostano*, which is fed till the following spring, but sometimes ploughed the end of autumn; 3, flax; 4, millet. Another course, called *coltura maggenga*,—1, break up the

layer for flax; 2, millet; 3, maiz; 4, wheat, the stubble of which remains in *spianata agostano*.

Cremonese.

1, Wheat, sown in October, and reaped in June, the stubble ploughed thrice for, 2, wheat, upon which sow clover the end of February; 3, clover, ploughed in November for, 4, flax, and then millet; 5, maiz; 6, wheat.

Carpianese.

1, Maiz; 2, wheat sown in the spring with clover, which is mown with the stubble, and remains *spianata agostano*; 3, clover; 4, flax, and then millet; 5, rice; 6, rice; 7, rice.

VENETIAN STATE.—*Bergamo.*

The land here is constantly cropped;—1, wheat; 2, clover, mown in the spring once, in time for maiz; 3, wheat; 4, clover. Also,—1, clover, or millet; 2, maiz; 3, wheat. By which courses they have half or a third of their land in wheat every year.

Brescia.

1, Wheat, and 20 lb. of clover-seed in March, per jugero,—the clover cut in August with the wheat-stubble, and then pastured; in winter dunged:—2, clover, called this year *prato grasso*, cut thrice; first in May, called *il maggiatico*; second in August, called *l'ostano*; third in September, *il navarolo*:—3, in March sow flax, which is gathered in June; then plough and sow quarantino, amongst which, at the second hoeing, sow lupines for manure:—4, plough in the lupines and sow wheat in November, which is reaped in June; cut the stubble immediately, and sow lupines or coleseed for manure:—5, plough in October, and sow wheat mixed with rye; reaped in June, and then sow part with quarantino and part with panic:—6, if a crop of coleseed is taken, it is sown amongst the maiz while growing, which cole is ripe in spring, in time to clear the ground for manuring and sowing the common maiz; if cole not sown, remains fallow in winter, and sow *melica* in spring,—the great millet.

Verona.

Here, as in all other parts of Lombardy, the land is never fallowed;—1, maiz, called *grano turco*:—2, wheat, and, when reaped, millet, or *cinquantino*; this is the quarantino of the Milanese:—3, barley or oats, and, when reaped, some other second crop. Wheat is always sown after maiz, and that after barley
or

or oats. No clover used here, except in rice-lands. In the rice-grounds,—1, wheat, reaped time enough for a crop of cinquantino; 2, maiz; 3, clover; 4, rice, &c. &c. Beans are also sown instead of maiz, and wheat after them, and prepare for wheat much better. On the dry lands, such as about the Lago di Guarda, &c. no clover, as the land is not good enough.

To Vicenza.

No fallow any where. There is a little clover, and very fine, but the quantity is small: all wheat and maiz, and scarcely any thing else.

Vicenza.

Wheat is always sown after clover, and cinquantino after wheat; but nothing prepares so well for that crop as beans, so that they are called the mother of wheat, *madre della formento*. This idea, in Lombardy, is as old as Gallo, who remarks, that wheat succeeds after nothing better than beans, which *in grassano maggiormente la terra, che non fa ogni altro legume**; and this he refers to as a custom of the Cremonese and the Mantuans. It is equally true in England; and such a combination of authority ought to convince such as yet want conviction, of the utility of beans as a preparation for wheat; more, perhaps, to be depended on than any other preparation whatever. A common course near this city, introduced as a variety, is,—1, maiz; 2, wheat and cinquantino. A farmer cultivated a field, during some years, in this course,—1, maiz; 2, wheat; 3, clover: and to preclude the necessity of dung, he used only the *vanga* (spade): for five years his crops were good, but afterwards declined greatly, till he could not get even clover. They sow wheat in October, and the clover-seed over it in March, if there is rain; the end of June the wheat is cut; the end of August the clover is mown for hay; and another small crop again in October: here is, therefore, within a year, one crop of wheat and two of clover. The grass is cut again in May, or beginning of the following June; a second time in August; and a third growth ploughed in for wheat, which is usually a very great crop in this husbandry.

Padua.

On all sorts of land, the most usual husbandry is,—1, dung for maiz; 2, wheat; 3, wheat, and then cinquantino or millet, &c. Clover is sown both in autumn and in spring; if the frost is not very severe, autumn is best, but spring the most secure. It is cut once after the wheat is reaped.

* *Le Venti Giornate dell'Agricoltura. Brescia, 1775. 4to. P. 59.*

Venice.

Sig. Arduino assures me, there is no fallow to be found in any part of the Venetian territory; they have not even a word to express the idea—*l'anno di riposo*, is a different thing, and always means clover, or a state of rest, without any tillage. That gentleman's expression pleased me much,—*La jachere è una sciocca pratica in agricoltura*. The two great points on which the best agriculture of the Venetian State turns, are maiz on clover, and wheat on beans. All these plants are equally necessary upon a farm; and there is a peculiarity in clover, as a preparation for maiz, and equally in beans, as preparatory for wheat.

Bologna.

In a very rich field near this city, which I viewed, the course had been, in 1787, wheat, which produced 100 corbi, or twenty times the seed. In 1788, hemp 5000 lb. In 1789, it is now wheat, and perfectly clean. This course, of,—1, hemp; 2, wheat, is, perhaps, the most profitable in the world,—and brings to mind the noble vale of the Garonne, under the same management. If land will do for hemp, they never fallow, but have some fields in the course,—1, fallow; 2, wheat, which ought to be considered as a disgrace to Lombardy. 1, Maiz; 2, wheat, is a course not uncommon. On the fallowed lands they sow beans, provided they have dung. Very little clover, preferring fenugreek, which is succeeded by wheat. Vetches they sow in autumn, and beans also, both for a crop, and also to plough in, in the spring, as a manure for hemp. With equal quantities of manure, beans give better wheat than hemp. Beans, on Sig. Bignami's farm, are now (November) six inches high on the tops of narrow ridges, but none in the furrows; these are for a crop, and infinitely too thick, I should apprehend. Lupines also, for ploughing in.

TUSCANY.

In the Valdarno di Sura, Colini, Sienisi, Pisani, Volterrana, they fallow, and their course is,—1, fallow; 2, wheat. After travelling so long in Lombardy without a fallow, it hurt me to find them common here. Clover is usually made a preparation for maiz in most parts of this country; and beans, where sown, are reckoned the best for wheat. At Martelli, &c. the course is,—1, beans, French beans, or maiz; 2, wheat; 3, wheat; 4, wheat and rye, and no after-crop. In the Valdichiana, the following course, I am informed, is pursued,—1, maiz and French beans; 2, wheat, and nothing after it; 3, wheat, and then raves,—and, in some places, clover added. At Villamagna, the course is,—1, *biade*, vetches, beans, &c.; 2, wheat; 3, wheat; 4, wheat.

The

The first wheat produces nine or ten times the seed, if after beans; the second six or seven; the third three or four:—a degradation that ought to explain fully the absurdity of such a system. In some districts the following is the course, —first year, biadi, viz. beans, pease, chick-pease, French beans, tares, lentils, oats, maiz, the great millet, small millet, panic in part, clover and oats, and, after cutting for forage, plough for some of the above. Second year, upon the land thus prepared, wheat is sown, called *grosso* and *aristata* mucked; or with half *grosso* and half *gentili* (white wheat). Third year, *gentili* wheat.

MODENA.

The bad farmers in the Modenese are fallowists, and their course is,—1, fallow, ploughed first in May or June, in August the second time, and the third in October, for sowing, 2, wheat. But the better farmers substitute beans, French beans, vetches, spelt, maiz, particularly the last, instead of a fallow. Upon soils that are very good, and manured, they have an execrable custom of taking three crops of wheat in succession; sometimes throwing in clover with the wheat, which is ploughed up in June for wheat again. When beans are sown in autumn, and stand the frost, they yield much more than spring sown.

The husbandry practised by Sig. Bertolini, which is the best of the country, is,—1, beans, sown in October, and harvested in May: then French beans, or formentoni, for forage, or chick-pease, or lentils; 2, wheat, the stubble ploughed thrice for, 3, wheat; 4, maiz, sown in March. To Reggio they fallow some of their land every third year; but more commonly substitute maiz, beans, or something else in lieu.

PARMA.

In the country about Vicomero, the common course is,—1, beans; 2, wheat; 3, maiz; 4, wheat.

PIEDMONT.—*Tortonese*.

A common course here, is,—1, beans; 2, wheat. Also,—1, melga (great millet); 2, wheat. But they have some lands in fallow courses.

SAVOY.

At Laneshourg, the common husbandry is that of a crop and a fallow: they plough in May or June, and again for the seed in August, when they sow the rye; and they have no wheat.

From these notes it appears, that there is something both to commend and to condemn in these Italian courses. The rejection of fallows is pretty general; this is a good feature, and the great stress they lay on beans, as a preparation for wheat,

wheat, cannot be praised too much. On the other hand, there seems to be no idea of so proportioning the crops of a farm, as to make cattle and sheep (kept on arable land) the preparation for corn: the culture of clover is not unknown, but scarcely extends further than to produce some hay. I no where met with artificial grasses introduced on so large a scale as to support a good flock of sheep. In some districts, the great plenty of watered meadow explains this deficiency; but there are more where it will not afford an apology. This objection, however, does not hold good in the Lodizan, where their immense dairies are supported on arable land, and certainly form one of the most curious systems of husbandry that are to be met with in Europe.

SECT. II.—OF SEED AND PRODUCT.

That reader who thinks slightly of the use of collecting a great mass of facts in these inquiries, has not, it is to be presumed, reflected sufficiently on the great importance, in every science, of combining circumstances apparently unconnected, in order for mutual illustration. He who collects such facts, insulated for a time only, may not live to see the effect of such comparisons; but the gradation of knowledge is preserved without interruption, and the uses will undoubtedly be discovered.

Savigliano.

They reckon here, that a farm of 100 giornati, one-third watered meadow, should yield 2300 liv. clear of taxes, landlord's half.

PIEDMONT.—*Turin.*

Products of Sig. Briolo's farm:—Wood, eight giornata; meadow, four; wheat, five; rye, five; maiz, five. Yields to the proprietor, for his half,

Ninety mines of wheat, at 3 liv. 10s.	-	-	315 liv.
One hundred and five ditto of rye, at 2 liv. 15s.	-	-	236
One hundred and forty ditto of maiz, at 2 liv.	-	-	280
Wood cut, at seven years growth,	-	-	71
Vines planted about the farm, 45 brenta of wine, at 5½ liv.	-	-	247
For landlord's half,	-	-	<u>1149</u>

Total, 2298 liv.

Wood, 71

2221 liv. product of nineteen giornati of arable and meadow, or 116 liv. per giornata (about 6l. per English acre); which is a very large produce. There are

are also mulberries enough to pay taxes; this land cost 750 liv. the giornata, and the wood 250 liv.

MILANESE.—*Milan to Pavia.*

The crops are—Wheat, seven or eight seeds.—Rye, eleven seeds.—Maiz, forty seeds.—Ditto quarantino, twenty seeds.—Millet, fifty seeds.

W H E A T.

PIEDMONT.—*Chentale.*

A proverb in this country is, that a good peasant should finish his wheat sowing by the 19th of October. After hemp, clover, or fallow, wheat yields forty to forty-five mine per giornata, each mina 45 lb. to 52 lb. average 47 lb. and the common price 3 liv. to 3 liv. 10s. but at present 3 liv. 15s. But, including good and bad farmers, and all soils, the produce is not more than twenty-four mine; that is twelve for the landlord and twelve for the tenant. They sow four to four and a half; the common produce is, therefore, six times the seed, which is miserable; the better crops between ten and eleven seeds. Allowing for the Piedmont pound, being about one-tenth heavier than the English (though only of 12 oz.), and that the giornata is not equal to an acre, their best crops, at forty-two or forty-three mine, will be near five quarters per English acre; and their average near three; which are not greater than might be expected. Their quantity of seed appears, however, to be immense, for it amounts to 199 lb. per giornata, which is extravagant; and makes it suspicious, that the giornata here is larger than the legal giornata of the principality.

Savigliano.

They sow here, of wheat, $3\frac{1}{4}$ eymena, and reap eight times as much, in a good crop.

Turin.

They sow five mine, or nine rabbii, and 10 lb. to the giornata; of rye and oats, the same quantity; of hemp, three mine; maiz, one-half; millet, one-half. Wheat produces twenty-five mine, or five times the seed; rye thirty; maiz fifty to seventy; millet twenty. The mina at 45 lb. the crop of wheat is about $5\frac{1}{4}$ coombs per English acre. For their land and climate, a miserable crop; but as good, or better, than they deserve, when their course of crops is considered.

MILANESE.—*Mozzata*.

Produce of wheat, eight stajo per pertica on the best land; five on middling; and three on the worst.

There is a singular neglect in keeping wheat in this country: being shewed the granaries at two houses, in which the quantity was considerable, I was surprised to find, that where some of the windows were open, the room stunk very much; the scent particular; and examining the wheat, I found the surface all either covered, even to shining, with the webs of wevils, or else in ropes, hanging together by it, and the flies busy; the wheat was two or three feet thick, and had not been stirred. In a third granary, to which I went for satisfying my curiosity, in the hands of the owner (for the other two belonged to noblemen, and were managed by intendants), I found in the same condition; and all agreed, that to stir the wheat is bad, as it makes the whole heap alike; whereas, by not moving it, the surface only suffers. On this, I thrust my arm into the heap, to examine the interior, which all stunk dreadfully. Perhaps, neither the wevil, nor any other insect, may live deep in the heap; but, for want of airing, the wheat stinks; not to mention the surface, which is a loss of 5 or 6 per cent. A most barbarous system of management. It is worth remarking, that the only good way of keeping wheat is in the straw: stacks should be built on cap stones, to keep vermin out, and the corn threshed as wanted.

Mozzata.

The products here, on three divisions of soil, are, per pertica, the measure the stajo,—

	Good.	Middling.	Bad.
Wheat, -	8	5	3
Rye, - -	8	5	4
Millet, -	8	5	3
Common maiz,	10	6	4
Ditto quarantino,	6	4	2
Lupines, -	8	6	4
Panic, - -	6	4	2

Clover hay, 350 lb. of 28 oz. per pertica,

at 3 mowings; 1½ ton per acre. In money

by corn, without mulberries or vines, 24 liv.— 15½ — 9½

For the landlord's share, I suppose. And, in respect to the country in general, if four square miles be taken around Mozzata, of six parts, three are good, two middling, and one bad. Average corn produce, 18½ liv. The common notion is,

is, that two-thirds of the gross produce go towards maintaining the farmer, supporting the cattle, wear and tear, taxes, &c. and that one-third is nett to the proprietor.

	liv.
Produce of 100 pertiche, at 18½ liv.	1850
Vines, proprietor,	150
— tenant,	150
	300
Mulberries, 2000 lb. leaves, at 4 liv. per hundred,	80
	2230
Deduct one-tenth of corn product, damaged by vines,	185
	2045
Deduct one-eighth of corn, for damage by hail; the produce of vines is nett, this allowed for,	209
	1836
Total nett produce,	1836

Hence, therefore, it does not quite reach 18½ liv. on the average.

Proprietor—one-third of corn,	555
— vines,	150
— mulberries,	80
	785

Or, per pertica, 7½ liv. (31s. per English acre. *)

Such land would sell for 145 liv. per pertica (28l. 16s. per English acre).

Codogno.

The seed and produce of the crops here, are,—wheat, sow one stara and reap six times as much; maiz, sow one-fourth of a stara, and get twenty for one; millet, sow one-eighth stara, and reap six stara; rye, sow one-half stara, the produce eight stara; rice, sow one stjajo, gain sixteen rough, or eight white.

A Bergamasque writer observes, that wheat cultivated with the plough, commonly yields four, five, and six times the seed; but, cultivated with the spade, twelve, fourteen, and sixteen times that quantity †, and this of greater weight; a sure proof of their miserable tillage.

* At 6½ pertica per acre English, corrected from some of the preceding proportions, from intelligence very lately received.

† Cantuni, *Istruzioni Pratiche interna al Agricoltura*. 8vo. 1788, Bergamo. P. 16.

Brescia.

Arable products in this vicinity, are,—wheat, three *facchi*, of fourteen *pezè*, each *pezè* 25 lb. being about six seeds. The *pezè*, of 25 lb. Brescian, being equal to $14\frac{1}{4}$ French, makes 206 lb. French per sack, or 224 lb. English: the three sacks, therefore, are 672 lb. English, on a *jugero* of four *pertiche*; this is scarcely twelve bushels the English acre, reckoning four one-fourth *pertiche* in that acre*. Maiz, sown in March, produces six, eight, ten *facchi*, each twelve *pezè* of 25 lb. This is about twenty-eight bushels to the English acre, supposing a bushel of maiz to be 50 lb.; but *quarantino* does not yield more than five such sacks. Melico (the great millet), fifteen *facchi*, of ten or eleven such *pezè*. Flax, six to nine *pezè*, at 20 liv. to 25 liv. the *pezè*; this is about 125 lb. the English acre, and 170 liv. at 6d. English, 4l. 5s. and per English acre 4l. Millet gives three *facchi*, of eleven *pezè*. Clover, three hundred *pezè* of hay, at three cuts; meadows yield the same as clover, but are pastured in autumn. Price of hay, 70 liv. the *carro*, of one hundred *pezè*. Three hundred *pezè* equal 4827 lb. English, and per English acre, 4522 lb. which we may call grossly two tons; a very poor crop for three mowings.

To Verona.

In this line of country, the Lombardy system, of planting all the arable lands with rows of pollards, for training vines, is at its height. There is a good deal of it from Bergamo to Brescia; and some are seen in passing from Vaprio to Bergamo, but not so universally as here. It is a most singular system; rows of maple, ash, or poplar, are planted, from four to seven yards asunder, and rows of vines at their feet, which are trained up those trees, and in festoons from tree to tree; the space is cultivated for corn. They do not seem to approve of a single stem for these pollards so much as several, for they have three or four, about six feet high; cropped every second year, to prevent too great a shade. In some places, mulberries are mixed with these common forest trees; one mulberry, and then two ash or maple. In some rows, beyond all doubt, the vines

* In the new edition of Agostino Gallo, the editors give a line for the length of a Brescian inch (*oncia*) ————— which is the length of $1\frac{1}{4}$ inch English. Twelve of those *oncia* make one *braccio*, and six *braccia* make one *cavezzo*; consequently there are $9\frac{1}{4}$ feet in a *cavezzo*. A *pertica* is an oblong square, twenty *cavezzi* long and five wide; now multiply $9\frac{1}{4}$ by 20, = 195; and multiply $9\frac{1}{4}$ by 5, = 48 $\frac{1}{4}$; and the one product by the other, = 9506 $\frac{1}{4}$ square feet for a *pertica*; and 4 $\frac{1}{4}$ *pertiche* equals an English acre; perhaps the editors of that new edition have made an error, in stating 30,709 French feet in their *jugero* of 4 *pertiche*.

are trained equally on the mulberries as on the other trees; but not generally, being fastened only to the stems of the mulberries. The better the land, the farther asunder are these rows, even to sixty or seventy feet; but, in worse land, much nearer. All the way, the soil is a stoney gravel, of an indifferent appearance in quality, but where holes are dug for trees, it looks better.

Verona.

Wheat here yields five or six times the seed. They sow one hundred Veronese pounds upon a campo of land, and reap five hundred and fifty, which is about two bushels of seed per English acre, and the produce eleven bushels. We have not, upon the poorest lands in England, so wretched a crop: to what are we to attribute it, if not to general bad management, united with the execrable system of incumbering their fields with pollards and vines. They steep their wheat seed in lime-water twelve hours, to prevent the smut.

Vicenza.

The thirty-two miles from Verona hither, are all, except a small quantity of irrigated land, lined into the same rows, as already described, from twenty-five to thirty yards asunder. Wheat is sown close under them; but with maiz, six yards are left on each side not cropped; and, in some pieces, those twelve yards are sown thick for forage, as not equally wanting sun; a sure proof that they admit the damage of the trees, and provide against it as well as they can. In some grounds preparing for wheat, manure is spread as far as the roots of the trees extend, but no further. What a system, to give dung to elms and maples, and to force wheat to grow under their shade!

Wheat has now (October 23) been sown a month or six weeks; it is high, and thick enough to hide a hare. The borders of these sown lands are dug clean away, as deeply as in Essex.

Maiz produces about nine one-half sacchi the campo. Inquiring here into the estimated damage resulting to corn from the plantations of trees in arable land, I was told, that the loss is one-tenth of wheat, and one-half of maiz, but to clover none. The trees here are all walnuts, for training vines to; the damage done by them, agreed to be very considerable. Of wheat they sow three stari, and the produce eighteen to twenty; of maiz one, and the crop thirty to thirty-five; of cinquantino, half a stara, produce sixteen; of buckwheat one-fourth, the return six. In the farms around the celebrated Rotunda, maiz produces five sacks, each of 150 lb.: a sack is four stari, and the stara about three pecks; this is fifteen bushels, and not sixteen, the acre. They are sometimes troubled with the smut; Sig. de Boning, President of the Academy
of

of Agriculture, has tried liming and lime-water, as a prevention, but without any success. Of maiz they have a new sort, that carries a male flower on the top of the cone, and this sort always fills with grain to the very point, which is not the case with other kinds.

In respect to the exhausting quality of crops, they reckon that the maiz which carries the flower at top takes most from the land: 2, millet: 3, common maiz: 4, wheat. It seems remarkable, that they should consider the crops which are preparatory to wheat as exhausting, more than the wheat itself.

Padua.

Of wheat they sow three staji in middling land, two in fertile soils, and four in bad ones, per campo: as the stajo is equal to forty-one French pounds, and the campo about one-tenth less than an English acre, it makes three staji equal to two and a half bushels per acre, which is pretty exactly the quantity we use in England. The crop is two mozzi on the best land, and one and a half on a medium; each mozzo twelve staji: this is about fifteen and a half bushels the acre, or under seven times the seed. Thus these wretched products pursue me through all Lombardy. Of maiz they sow three quarti, or three-fourths of a stajo, but if planted, two: the produce, good five mozzi, middling three, bad one. Of lucern (the quantity very inconsiderable) and of clover they sow 12 lb. *grosso*. This pound is to the French one as 9150 is to 9216; this is between 14 lb. and 15 lb. per acre. Clover gives three carri, each 1000 lb. at three cuts. Lucern four carri, at four or five cuts. Almost the whole country is lined into rows of pollards, as already described; yet they admit that every sort of tree does very great damage to all arable crops; but to grass the mischief is not great.

To Venice.

The same level to this city that reigns about Padua, equally enclosed and planted; much of it arable, and almost the whole cut into little scraps of fields, with many gardens. Near the Adriatic, a dead level marsh, covered with marsh grasses.

ECCLESIASTICAL STATE.—*Bologna.*

In a famous field near the city, remarkable for yielding great crops of hemp, wheat yields one hundred corbes for five of seed. In general, they sow two and a half tornature of land, or one acre and a quarter, with a corba of seed, or 150 lb. to 160 lb. (something under the English pound); and in all the Bolognese, on an average, the produce is about five seeds, some only three; but
on

on the best hemp lands twelve to sixteen, on a medium; but twenty for one are sometimes known.

TUSCANY.—*Florence.*

In the plains, the general produce is eight times the seed; the whole dutchy through, not more than five or six: in the deposits of rivers, or spots remarkably rich, twelve, fifteen, and even twenty. All these are wheat. Beans four and a half and five. On one stioro of land they sow three-fourths of a stajo of wheat, which weighs 52 lb. to 55 lb. of 12 oz. (this pound is equal to three quarters of a pound English.) On the hills they sow one-fourth more. Supposing the stiora * to be, according to De la Lande, 7056 French feet, about $5\frac{1}{2}$ make an English acre; three-fourths of a stajo therefore per stiora, equals 165 lb. per acre, or very near three bushels.

* There are three accounts before me of the contents of a Tuscan stiora. Mons. De la Lande, tom. ii. p. 314. says, "le stiora = 196 toises quarrés en superficie;" these are French toises, each six feet; this makes about $5\frac{1}{2}$ stiori to an English acre; that is to say, 7056 French square feet, of which 38,300 are an acre. In *La Squadra mobile l'Aritmetica e l'Agricoltura, del S. Sangiovanni*, 4to, Vicenza, 1759, p. 11. and 132. is the measure of the soldo of Florence, which equals $1\frac{1}{2}$ inch English; the braccio is 20 soldi, or $22\frac{1}{2}$ inches English, (by another account $23\frac{1}{2}$); 6 braccia make a canna; and 8 canne long, by 6 broad, make a stiora. Hence there are 6075 English feet in the stiora; consequently there are something above 7 stiori in an acre. Mons. Pauton, in his *Metrologie*, p. 794. compares it to the arpent of France of 48,400 French feet, and makes it to that arpent as 0.11461 to 1.0000; by this account it will be about 27,800 French feet, of which feet 38,300 are an acre, or above $1\frac{1}{2}$ stiora. In the *Giornale Fiorentino ai Agricoltura*, 1786, p. 253. "L'acre al nostro stioro stà come 18,992 a 10,592;" by this ratio, an acre is about $1\frac{1}{2}$ stiora. All these accounts differ therefore greatly. To compare other circumstances---At Martelli, they sow one-third of a stajo of wheat seed on a stiora; and at Villamagna, they sow $3\frac{1}{2}$ stiori with 1 stajo, which quantities nearly agree. By De la Lande's account, this will be per acre English 73 lb. which appears to be a smaller quantity than any where used. By Sangiovanni, it will be about 94 lb. still under the common quantities. By Pauton, it will be about 17 lb.; a portion not to be named as the seed of an acre. And by the Florentine author, about 23 lb. which is almost equally absurd. Seed wheat will agree with none of the measures; suppose they sow $2\frac{1}{2}$ bushels per acre, then there are 15 stiori in an acre. If 2 bushels, then there are 12 stiori. All is confusion.

At Villamagna, they sow 24 staji of beans on 28 stiori of land; this is about 3 bushels English per $5\frac{1}{2}$ stiori, which agrees very well with an acre being $5\frac{1}{2}$: they sow also 6 staji of oats on 10 stiori, this would be 2 bushels on 5: they sow oats therefore rather thinner, proportionably to the English practice, than beans.

Upon my getting a friend to write to Tuscany for information, I received such as proved of no use; simply this table,---1 quadrato, 10 tavole; 1 tavola, 10 pertiche; 1 pertica, 10 decche; 1 deca, 10 braccia squadra. This makes the quadrato under 40,000 feet English. But what is the stiora? Such are the endless difficulties in every thing concerning measures.

Where authorities, apparently good, differ so greatly, the reader will of course receive all estimations with many doubts.

But

But I found at Martelli, near Florence, that they sowed but one-third of a stajo per stiora, which would not be more than two bushels per acre. Beans would be much more cultivated, but for the pernicious plant the *cuscuta*—a parasite that feeds on and destroys the crop, so that even the seed again is not reaped; in the old botany called *orobanchis ramosa*, and in Tuscany *succa mala*, and *fiamini*. Of saggini they sow $1\frac{1}{2}$ stajo of seed, and the produce fifty to sixty. Of formentone (maiz) they sow half a stajo, and reap twenty-five.

On the plains in Tuscany, the chief product is wheat, the second wine, and the third oil; but on the southern side of the hills, olives on spots bad for them, and wine. Silk no where enough to be a chief object.

MODENA.

The country from Modena to Reggio constantly improves in its features, and must be reckoned among the best cultivated in Lombardy; the fields are thrown into arched lands, like Flanders, about twenty-five yards broad, and small ridges on those: a row of trees is planted on the crowns of some, and along the furrows of others: in some there are neat grass trenches; and as the fences are equally well made, and the meadows with a good aspect, the country carries the general features of being well cultivated. The appearance of these broad ridges, in two of the best cultivated countries in Europe, Lombardy and Flanders, justly gives a high idea of the practice.

PARMA.

From Reggio to Parma, there are many lands, three or four yards broad, now (November) deeply ploughed, and the furrows cleaned out by spades, laid up in this manner, for planting beans in the spring; excellent management. There are also a good many autumn sown ones, three or four inches high: produce in general, about Vicomero, wheat four or five times the seed, and beans five or six. To Firenzuola this practice takes place yet more, and is better done. The merit of their husbandry appears to be greater about Parma than at Piacenza; there is a visible decline as you advance.

SAVOY.

At Lanefbourg, they sow only rye, which they harvest in July, the produce about six for one.

If the intelligence concerning the produce of wheat be reviewed, it will be found, on an average, varying from five to seven and an half times the seed; generally between five and six. Suppose the latter number, and we shall, with reason

reason, be amazed at the miserable products of this rich plain, in every thing except grass and silk. The average soil of England cannot be compared with the average soil of Lombardy, yet our mean produce is eleven times the seed, perhaps twelve. Every one must be curious to know the cause of such wretched crops: I attribute them to various circumstances—but the predominant cause must be sought for in the small farms occupied either by little peasant proprietors, or, what is more general, by metayers. This abominable system of letting land is the origin of most of the evils found in agriculture, wherever the method prevails. Such poor farmers, who, in every part of Italy where I have been, are so miserable, that they are forced to borrow of the landlord even the bread they eat before the harvest comes round, are utterly unable to perform any operation of their culture with the vigour of a substantial tenantry; this evil pervades every thing in a farm; it diffuses itself, imperceptibly to a common eye, into circumstances where none would seek it. There are but few districts where lands are let *to the occupying tenant* at a money rent; but wherever it is found, *there crops are greater*; a clear proof of the imbecillity of the metaying system. Yet there are politicians, if they deserve the name, every where to be found, who are violent against changing these metayers for farmers; an apparent depopulation is said to take place; and the same stupid arguments are heard, that we have been pestered with in England, against the union of farms. Men reason against that improvement of their lands, which is the natural progress of wealth and prosperity; and are so grossly absurd as to think, that doubling the produce of a country will deprive it of its people.

SECT. III.—OF THE CULTURE OF CERTAIN PLANTS.

Gallega Officinalis.

Commonly spontaneous in the fields, between Milan and Pavia, and wherever cattle have admission all closely eaten.

Paliurus.

I know no plant that makes a better hedge than this in the north of Lombardy. Sig. Pilati, near Brescia, has one of six years growth, as good as an excellent white thorn one in England would be in ten.

Trigonella Fœnum Græcum.

Cultivated in the Bolognese in preference to clover; soil with it; and sow wheat on the land.

Sainfoin.

In Tuscany, the *coline di Pisani* are much under this plant, which is called *lupinello*; particularly about Castel Fiorentino, where it was introduced about twenty years ago, by Sig. Neri; one of the good deeds which deserve a nation's thanks, better than a victory, or the taking of half a dozen towns. A thousand sacks of the seed were sent thence to Naples and Sicily. Will those kingdoms awaken at last? Sig. Paoletti, at Villamagna, has a piece of good sainfoin on a steep slope; but I found one-third of it burnet.

Larch.

In the Milanese, at Mozzata, the Count de Castiglioni having 200 pertiche of waste heath, and a community 200 more adjoining, he took a lease of it for ever; and ploughing the whole, sowed acorns, planting alder, larch, and other trees, which do well; but the sown oak, in eight years, exceeded every thing, and are beautiful trees: the soil a poor gravel. We have in England so many prejudices, that a man who does not travel is apt to think that every thing English is better than the same things in other countries; and, among other follies, that for oak England is superior to all the world: but timber wants sun as much as wheat; and I have no where in England seen such a growth of timber, as in many places abroad. Larch abounds greatly in the mountains, and is reckoned an admirable wood for water-works; all posts are of larch. I have read in some writer, that there is a law, in many parts of Lombardy, which allows a land-proprietor, whose estate is entailed, to plant, on the birth of a daughter, a certain number of Lombardy poplars, which are her portion on coming of age, or being married, in spite of any entail. I enquired, both in Piedmont and here, into the truth of this, and was assured there is no such law; nor did they ever hear of the custom, even when estates have not been entailed.

In the arsenal of Venice, is some quantity of larch, kept under cover; and valued greatly for all works exposed to water. They are not very large, but cost twenty-two ducats each. The masts are very fine pine-trees, from the upper Trevisano; I measured one thirty-eight yards long, and two feet diameter at the butt, and one foot at the other end.

Lucerne.

I mention this plant, for an opportunity of observing, how very rarely it is cultivated in Italy: I saw a little near Padua; and there is an inconsiderable quantity in the Parmesan, where it is cut five or six times; they find, that cows give more milk on it, than on any other grass.

Raves.

Raves.

I was somewhat surprized, to find turnips, or rather the French raves (for I fear they are not the genuine turnip), cultivated in Tuscany. I was assured, that in the Valdichiana there are many, sown immediately after wheat, but never hoed, yet come generally from 2lb. to 5lb.; some to 30lb. (20lb. English), and that they are applied to the feeding and fattening of oxen, which sell at 140 *scudi* the pair (39l. 13s. 4d. English); nothing beside is given, except a little hay.

Cyprus Tree.

At Soma, near the Lago Maggiore, there is a very famous cyprus tree, which Corio, in his *Storia di Milano*, says, was the place where the people assembled in congress in the thirteenth century; it was then the most celebrated tree for size and age in the whole Milanese; and must therefore be immensely old at present. It is now in good health, except a few branches that have suffered a little towards the top; it is nine *braccia* in circumference.

CULTURE OF SILK.

Nice.

Eight *roup*s of cocoons, or 84 lb. make 24 lb. of filk (11½ oz.), which sells at 10 liv. 5s. the lb.; a *roup* of leaves sells at 20s. and 250 *roup* are necessary for 8 oz. of grain (eggs).

Coni.

The whole country, after ascending the Alps, is planted with mulberries, around every field, and if large, in lines across. I remarked great numbers from ten to fifteen years old.

To Chentale, 1 oz. of grain requires 360 *roup* of leaves; each *roup* 25 lb. and yields 4 or 5 *roup*s of *bozzoli* or *cacata* (cocoons), and 1 *roup* of cocoons makes 3 lb. of filk. The price of organzine 20 liv. to 24 liv. per lb.; the *offal* pays the spinning. Gathering the leaves costs 2s. to 3s. the *roup*.

Chentale.

The seed of the mulberry is sown in nurseries, and the trees commonly planted out at four years old. The first, second, and third year, they are pruned, for giving the branches the right form; the fourth, they begin to gather the leaves. Some which were shewn me by the Count de Bonavent, of eighteen years old,

give 6, 7, and to 8 *rubbi* of leaves each. One old tree, a very extraordinary one, has given 53 *roups*. A large tree, of fifty or sixty years, commonly yields 25 *rubbi*. They never dig around them, nor wash the stems as in Dauphiné; but they have a practice, not of equal merit, which is to twist straw-bands around the stems, to defend them against the sun. For one ounce of grain 65 to 80 *rubbi* of leaves are necessary, which give 2½ *rubbi* of cocoons and sometimes so far as four. One *rubbio* of cocoons yields 20 to 21 oz. of silk organzine, of the price of 18 liv. per lb. For gathering the leaves, from 1s. 8 den. to 2s. the *rubbio* is given. The offal (*morefca and chocata*) pays the winding and spinning. They never hatch the worms by artificial heat; using only that of the sun, or of the human body. The common method of carrying on the business is, to provide, as in France, grain and mulberries, and to receive half the cocoons. The cultivation is so profitable, that there are many lands to which mulberries add a value of 200 liv. or 300 liv. more than they would sell for if they contained none; and it is farther thought, that they are but little injurious to corn, the shade not being so prejudicial as that of the walnut, and of some other trees. The common estimation of profit is, that trees of all ages yield from the time of beginning to bear, from 30s. to 4 liv. each nett to the landlord for his half produce.

Turin.

One ounce of grain gives 2 to 4 *rubbi* of cocoons, and demands 120 *rubbi* of leaves; 1 *rubbio* of cocoons will give 22 oz. of commonly well spun silk. The price of grain 12 liv. the oz. when very scarce, but in common 30s.; that of leaves 7 or 8s. per *rubbio*. Cocoons 21 liv. per *rubbio*. When I asked the price of the silk, the answer was, Oh! for that! it is the price the English choose to pay for it. The common price of organzine, 16 to 20 liv. first quality; raw, 12 liv. For gathering the leaves, 2s. per *rubbio* is given. Of the different sorts of mulberry, the wild is the best, in point of quality of silk. A tree of twenty years, will give 24 or 25 *rubbi* of leaves; some to 35 *rubbi*. The trees are grafted in the nursery, and planted out at four years, at the beginning of April; price, 20s. to choose out of many; and in four years after, begin to gather. When planted in watered meadows, the gathering damages the hay almost to the value of the leaves, yet many are so planted; and many peasants think they lose in corn by the shade of the trees, as much as they get by them. From the 22d to the 26th of April, is the season for hatching; never by fire; nor have they any method of retarding the hatching, in case of a want of leaves. Endive, lettuce, and elm leaves, have been often tried as a succedaneum, but always killed the worms; such things must never be depended on. The peasants generally sell the cocoons, not one in a hundred spinning. A chamber of twenty feet by
twelve

twelve feet is necessary for 3 oz. of grain; and six tables, one *trebucco* long and two-thirds wide.

Novara.

Passed this place towards Milan, which is a great tract of mulberries for several miles.

MILANESE.—*Buffalora to Manienta.*

Many mulberry hedges, but they are bad and ragged; some new planted in the quincunx position. For several miles, the country is all planted in rows of vines, at twelve, sixteen, and twenty feet, and fruit trees among them, for their support; among which, are many mulberries, and the vines running up them. This must be a most profitable husbandry indeed, to have silk and wine not only from the same ground, but in a manner from the same tree. Between the rows, the ground is cultivated; millet, maiz (cut), *bolcus sorgum*, the great millet, lupines, with dung amongst them, to be ploughed in for wheat, with young maiz, sown thick, as if for fodder.

Citricho.

A beautiful mulberry hedge, and in good order; six to eight inches from plant to plant, and cropt at sixteen or eighteen from the ground. It is clear therefore, that the plant will do, with care, for a good hedge. Towards Milan, mulberries decline, oak and other pollards being found in their stead.

Mezzata.

The culture of mulberries and making silk, being here much attended to, were principal objects in my inquiries. The fruit is well washed, the end of June, to make the seed sink; it is then sown in rows, in a bed of earth well manured, and finely laboured, in the rich nurseries near Milan; covered very lightly, and the surface lightly flattened; straw is spread to defend it from the sun, and much water given. When the young plants appear, they are weeded by hand. The second year, they grow to two or three feet high, and hoed and thinned. The third year, they are cut to the ground above the buds that are to push, and transplanted from those nurseries, in the vicinity of the city, to others that are scattered all over the country, in ground well dug and manured, and at two feet square; here they are kept clean by hoeing. The fifth year, in the spring, they are cut again to the ground; they then shoot very powerfully, and attention must be given, to keep but one good shoot, and the ground is dug or hoed deeper than common, and also dunged. The sixth year, those that are high enough, are grafted; and the rest, the year following. Those that took
the

the sixth year, ought to rest in the nursery three years, including the year of grafting, that is, the seventh and eighth year. They do not like to plant large trees, and have a proverb,

Se vuoi far torto al tuo vicino,
Pianta il moro grosso e il fico piccolino.

As to plant small fig trees is as bad as large mulberries.

The holes are made in winter for receiving them where they are to remain; these are nine feet square and two feet deep, and have at the bottom a bed of broom, bark of trees, or other rubbish; then the best earth that can be had, and on that dung, one load of sixteen feet to four trees; this is covered with more good earth, and this levels the hole with the rest of the field; then prune the roots and plant, setting a pole by the young tree to the north, and a spur post on the other side, to guard it from the plough. Twine no straw the first year, because of the insect *forficula auricularia*, L.; but in November bind straw around them against the cold, or, as straw is dear, the *poa rubra*, which abounds. Never, or very rarely, water. Much attention to remove all buds not tending in the right direction.

The fourth spring after planting, their heads are pollarded, in March, leaving the shoots nine inches long of new wood, and seeking to give them the hollow form of a cup, and that the new buds may afterwards divide into two or three branches, but not more. The next year, they begin to pluck the leaves. They are attentive in pruning, which is done every second year, to preserve as much as they can the cup form, as the leaves are gathered more easily. Thus it is about fourteen years from the seed before the return begins.

After gathering the leaves, a man examines and cuts away all wounded shoots; and if hail damage them, they are cut, let it be at what time of the year it may. Old trees are pruned after gathering, but young ones in March. In autumn, the leaves are never taken for cattle before the 11th of November, as the trees after that time do not suffer. The third year after planting young trees, they sow about a hat full of lupines around the stem, and when about ten inches high, dig them in for manure. The opinion here is, that the mulberry does very little harm to rye or wheat, except that when cut the falling of branches and trampling are somewhat injurious. Maiz, millet, and panic are much more hurt. A tree, five years after transplanting, gives 10 lb. of leaves, each 28 oz. At ten years, 18 lb. At fifteen years, 25 lb. At twenty years, 30 lb. At thirty years, 50 lb. At fifty to seventy years, 70 lb. There are trees that give 80 lb. and even 100 lb. The price of leaves is commonly 4 liv. per 100 lb. (28 oz.). For one ounce of grain 500 lb. of leaves are necessary, and yield 17 lb. of cocoons; but among the risings in the mountain of Brianza, 25 lb. To make a pound of filk, of 12 oz.
5 lb.

5 lb. or 6 lb. of cocoons, of 28 oz. are required. Price of cocoons, in the low watered country, 2 liv. per lb. (28 oz.). At Mozzata, 2½ liv. At Brianza, 3 liv. The grain is hatched in a chamber, heated by a chimney, and not a stove, to 17 deg. of Reaumur (70½ Far.); but before being placed in this chamber, they are kept eight days under a bed, with a coverlet upon them, in boxes covered with paper pierced: and when hatched lay the young leaflets of the mulberries on the paper, to entice them out. The method of conducting the business here is the same as in France, the landlord furnishes half the grain, and the peasants half, and they divide the cocoons. Price of grain, 2 liv. the ounce. Mulberries, of all ages, are pollarded every second year; a mischievous custom, which makes the trees decay, and lessens their produce; it is never done in Dauphiné, where the culture is so well understood.

Milan.

Sig. Felice Soave made some interesting trials on silk worms.

At Lambrate, near Milan, 2 oz. of seed in rooms, kept to the heat of 23 and 24 deg. Reaumur, hatched well, and kept healthy: the 28th of April, the seed was placed in the rooms, and hatched in the third, fourth, and fifth day: the 21st of May, the first cocoon seen, and at the end of the month all were at work. The product gathered the 3d of June; the product 92½ lb. cocoons (28 oz.); eighty-four of them having been spun from four and five cocoons, gave 20½ lb. (12 oz.) of silk, stronger and more shining than common: the consumption of leaves, 1420 lb. of 28 oz. Wood used for fire, 2800 lb.; but the two rooms would have served for 4 oz. of seed. In the common method, without stoves, the consumption of leaves is 500 lb. for an ounce of seed, and the medium product is not above 15 lb. of cocoons; and by this new method, the consumption of leaves has been 710 lb. each ounce, and the produce 46½ lb. cocoons. Sixteen or seventeen cocoons weigh an ounce in the common method, but in this only thirteen or fourteen. The silk cannot commonly be spun from five or six cocoons; these were spun easily from four or five, and might have been done from three or four. To gain a pound of silk, in common, 5 lb. of cocoons are necessary; but here the same quantity has been gained from 4 lb.

Lodi to Codogno.

In this dead level and watered district, there are very few mulberries; none except near the villages; many of them, not all, appear unhealthy; perhaps by reason of their not exerting the same attention as in Dauphiné, where there is, in irrigated meadows, mounds made to keep the water from these trees.

Codogno

Codogno to Crema.

Mulberry trees here have large heads, as in Dauphiné, instead of being pollarded incessantly, as to the north of Milan.

There is an idea in the Milanese, that silk was introduced by Ludovico il Moro. Francesco Muralto reports, "Prædia inculta infinita duobus fluminibus ad novalia (Ludovicus), reduxit infinitas plantas Moronum ad conficiendas setas, seu sericas plantari fecerat et illius artis in ducatu, primus fuit auctor *." It is said to have been introduced into Europe by some Basilian monks, from Sirinda, a city of Indostan, to Constantinople, under the Emperor Justinian, in the year 550, by one account †; and by another, in 525 ‡. In 1315, the manufactory of silk was brought in Florence to great perfection, by the refugees of Lu ‖; but during the fifteenth century, no silk was made in Tuscany; for all used in that period was foreign, silk worms being then unknown §. In 1474, they had eighty-four shops that wrought gold and silver brocaded silks, which were exported to Lyons, Geneva, Spain, England, Germany, Turkey, Barbary, Asia, &c. ** Roger I. King of Sicily, about the year 1146 ††, having conquered some Grecian cities, brought the silk weavers from thence into Palermo; and the manufacture was soon imitated by the people of Lucca, who took a bale of silk for their arms, with the inscription—*Dei munus diligenter curandum pro vita multorum* ‡‡. In 1525, the silk manufacture at Milan employed twenty-five thousand people; and it seems to have augmented till 1558 ‖‖. In 1423, the Republic of Florence took off the duty of entrée upon mulberry leaves, and prohibited the exportation; and some communities of Tuscany have records concerning silk anterior to that period §§.

In almost all the districts of the Milanese, mulberry trees are met with, very old, with towering branches; among which are those of Sforzesca, planted under Ludovico il Moro *†, who lived at the end of the fifteenth century.

VENETIAN STATE.—*Vaprio to Bergamo.*

There are many mulberries, mixed with the cultivation of corn and vines, in this tract of country.

* *Atti Societa Patriotica*, vol. ii. p. 220. † *Saggio sopra la Replicata Raccolta della Foglia del Gelfo*, 1775, p. 1. ‡ *Dizionario del Filugello*, 12mo, 1771, p. 43. ‖ *Ragionamento sopra Toscana*, p. 49. § *Decima*, tom. ii. sez. 5. cap. 4. ** *Benedetto Dei*. †† *Giannone Storia Civ.* Y. ii. lib. 11. cap. 7. p. 219. *Giulini*, tom. v. p. 461. ‡‡ *Saggio*, &c. p. 56. ‖‖ *Opusc. Scelte*, vol. vii. p. 12. *Bartolozzi*. §§ *Corso di Agricoltura Pratica*. *Lastri*, tom. i. p. 285. *† *Elementi d'Agricoltura*. *Mitterpacher*, tom. ii. p. 513.

Bergamo.

Four ounces of seed are here given to each poor family, which yield four *pesi* of cocoons.

Brescia.

One hundred *pesi* of leaves are necessary to 1 oz. of seed; and four *pesi* of *bozzoli*, or cocoons, are the produce of 1 oz.; and the *peso* of cocoons gives 28 to 30 oz. of filk. Cocoons sell at 45 liv. per *peso*. Leaves at 1 liv.; and filk at 22 liv. to 24 liv. per lb. The trees are lopped every three years; yet some are known that give 20 *pesi* of leaves. Small ones half a *peso* and one *peso*.

Verona.

One ounce of seed demands seventeen or eighteen *facchi* of leaves, each one hundred Veronese pounds (or 74 lb. English). Twelve ounces of seed are given to each family; and each ounce returns 60 lb. of cocoons, at 12 oz. the lb.; the price 24 *f.* the lb. To each ounce of seed sixteen to eighteen *facchi* of leaves, each 100 lb. of 12 oz. are necessary. The 60 lb. cocoons, at 24 *f.* are 72 liv. or 36s.; which is the produce of eight trees, or 4s. 6d. a tree, the half of which is 2s. 3d. It must however be remarked, that these prices of cocoons vary so much, that no rule can be drawn from them: this price of 24 *f.* the pound is very low, and must arise from some local circumstance. One ounce of filk to one pound of cocoons. They are here, as in the preceding districts, in the custom of finding the trees, and half the seed, and the peasants the rest; and they divide the cocoons. A tree of forty years old will give four *facchi*; and if a plantation consist of one thousand trees, they will, one with another, give two *facchi*. They make filk in the Veronese to the amount of a million of pounds of 12 oz. There are, near the city, some trees in a rich arable field seventy years old, that yield from four to six sacks of leaves each; this is about 10s. a tree, at the lowest price of cocoons.

To Vicenza.

There are many rows of mulberries in the meadows, that are never dug around, and yet quite healthy, which proves that they might be scattered successfully about grass lands, if any proof were wanting of so undoubted a fact. In the arable lands, the soil all gravel, they are planted twelve ridges apart. Some of the trees are old, that spread seven or eight yards across.

Vicenza.

The produce of silk amounts here to about 6 liv. the *campo*, over a whole farm; this is about 3s. an acre. The *sacco* of leaves weighs 75 lb. and forty *sacchi* are necessary for one ounce of seed; which gives 100 lb. of cocoons, and 10 lb. of silk. One hundred trees, of twenty years old, yield forty *sacchi*; price 3 liv. to 11 liv.; commonly 3 liv. Price of cocoons 30s. to 50s. the pound.

I was glad here to meet with some intelligence concerning the new silk worm, said to have come from Persia, which they have had here eight years, but is in the hands of so few persons, that I could get none of the seed; and I suspect that it is lost; for, on repeated inquiries, I was referred to other parts of Italy. While they had this worm, they had four crops of cocoons a year:—
1. In the beginning of June. 2. The end of the same month. 3. The middle of August. 4. In October. This worm is essentially different from the common ones in the circumstance of hatching: no art will hatch the eggs of the common sort the first year, that is the year of the flies dropping them; they can be hatched the year following only; but of this new sort, the eggs will hatch in fifteen days the same year, if they be in the proper heat. But it is to be observed, that they use this sort of worm not really to command several crops in the same year, for mulberry trees will not bear it without destruction, but merely as a succedaneum to the common sort of worms, if by frosts in the spring they be lost for want of food; this new sort is in reserve, to apply the leaves to profit once in the year. Theoretically the plan is good; but there must have been something in practice against it, or we may conjecture that after many years the use of them would have been generally introduced.

This will not be an improper place to introduce some remarks on this subject, by an author much esteemed, but quite unknown in England. It appears from the work of Count Carlo Bettoni, of Brescia, that the discovery of the new silk worm arose from experiments made with a view of finding out a cure for the sickness of mulberry trees, called *moria*; this was supposed to arise from stripping the leaves in the spring annually; it was thought, that if some means could be discovered of postponing the gathering much later in the year, it would greatly favour the vegetation and health of the trees; an effect that could only take place by means of a worm that would hatch much later than the common one. In 1765, a second hatching of the eggs of the common worm is said, by the same author, to have been made; part of which were fed with the second growth of leaves, and part with the leaves of trees that had not been gathered in the spring. Those fed with the old leaves gave a greater number of cocoons, and of a better quality than the others. These experiments were repeated by many persons; and it was found, that in the heats of July

and

and August the worms would not do well; but in September much better, and that the trees did not suffer from having their leaves gathered in September. The same author says, that the new worms (which he calls *forestieri*) will hatch three times a year, and that no art will prevent it; no cellars, no cold will keep them from it, though it may retard them some time, as he tried in an ice-house, by which means he kept them inert till August. But, on the contrary, the common sort cannot in general be hatched a second time the same year, even with any heat that can be given; yet he admits, that they were hatched by certain persons in 1765. The new ones sleep four times, like the common ones, but begin to spin their cocoons five or six days sooner: they eat less in quantity, but give less filk; and as this defect is balanced by the advantage in food, they ought not, says the Count, to be proscribed. Their cocoons are small, but the consistency is good and fine; and their filk is fine and softer than the common: he sold it for 4 liv. or 5 liv. a pound more than common filk. There is, however, an evil attends them, which is the uncertainty of their hatching the second and third time; sometimes all the seed will hatch, but at others only a part; even only the seventh and tenth of the quantity: but the first hatching is regular, like that of the common worms. A circumstance in the course of his trials deserves noting, that he found the worms of both the old and new sorts would drink water when offered to them, and that the cocoons were the larger for their having had the water.

They have had a sort in Tuscany that hatches twice a year; and the Count writing thither for information concerning them, found that their filk was coarser than the common, and of less value; and he judges them to be a different kind from his own, which hatches three times. The Count concludes nothing determinate concerning them; but resolves to continue his numerous experiments and observations. As there may be persons who think, as I did at first, when I heard of this sort of worm, that if any succeed in England it would probably be this; it is proper to observe, that Count Bettoni had nothing in view but the diseases of the mulberry trees, and does not seem to have had at all in contemplation the evils attending late frosts, depriving the worms of their usual food; and if the common sort may be retarded in hatching (which he shews) till August, equally with the new sort, there does not seem to be any extraordinary advantage in this sort, for a northerly climate, more than in the others. The Count's book* was printed at Venice in 1778.

Sig. Pieropan has made an observation, which deserves noting; mulberries, and likewise other trees, are generally found to succeed much better when grafted a little before sun-set than at any other time: the reason he attributes

* *Progetto per preservare i Gelfi, &c. Co. Carlo Bettoni. 8vo. Various passages.*

to the heat of the earth after sun-set; he kept a journal some years, of the comparative heat of the atmosphere and the earth, at the depths of four, twelve, and twenty-four inches; and has found, that immediately after the setting of the sun the mercury in those thermometers under ground had always risen some degrees gradually till the rising of the sun, when it as regularly falls.

The following is the Account of the Profit and Loss of Six Ounces of Seed, for Three Years, at Vicenza, by Sig. Carlo Modena.

1778.

Expences.

	liv.	s.	den.
<i>Semenza</i> —seed, 6 oz.	36	0	0
<i>Foglia</i> —leaves, 26,475 lb.	1545	4	0
<i>Spesa</i> —gathering leaves and attendance,	868	16	0
<i>Filare</i> —spinning 992 lb. cocoons, which give 159 lb. 5 oz. filk,	557	18	0
	<u>3007</u>	18	0

Produce.

159 lb. 5 oz. of filk,	4144	15	0
Refuse ditto, 41 lb.	102	10	0
Seed, 55 oz.	330	0	0
	<u>4577</u>	5	0
Expence,	3007	18	0
Profit,	<u>1569</u>	7	0

1779.

Expences.

Seed, six ounces, half given to the peasants, three ounces,	18	0	0
Leaves, 15,607 lb.	753	9	0
Spinning—the produce 446 lb. cocoons, half of which, 223 lb. to the proprietor, 29 lb. of filk,	101	10	0
	<u>872</u>	19	0

Produce.

29 lb. of filk,	754	0	0
Refuse ditto,	21	2	0
	<u>775</u>	2	0
Loss,	<u>97</u>	17	0

1780.

1780.—Upon his own account.

<i>Expences.</i>						<i>liv.</i>	<i>s.</i>	<i>den.</i>
Seed, 6 oz.	-	-	-	-	-	36	0	0
Leaves, 370 sacks,	-	-	-	-	-	957	13	0
Gathering and attendance,	-	-	-	-	-	1303	12	0
Spinning 910 lb. of cocoons,	-	-	-	-	-	265	0	0
Reducing 118 lb. 6 oz. of filk into organzine,	-	-	-	-	-	451	10	0
						3013	15	0

<i>Produce.</i>								
Refuse filk,	-	-	-	-	-	116	4	0
118 lb. 6 oz. of organzine,	-	-	-	-	-	4325	5	0
Leaves sold,	-	-	-	-	-	28	0	0
Silk kept for own use, 2 lb. 3 oz.	-	-	-	-	-	49	10	0
						4518	19	0
Expences,	-	-	-	-	-	3013	15	0
Profit,	-	-	-	-	-	1505	4	0

This year the profit would have been much greater ; but through the negligence of the women in the night, not attending to the degrees of heat (from 25 to 27 deg. Reaumur), many were suffocated *.

To Padua.

One ounce of seed gives 60 lb. of *galetta* (cocoons), and 8 lb. to 10 lb. of *galetta* 1 lb. of filk : the ounce of seed requires sixteen sacks of leaves, of four *pesi*, each 25 lb. ; and twelve small trees yield one sack, but one great tree has been known to yield six sacks. Price of gathering, 20*s.* the sack. Expence of making 60 lb. of filk, 250 *liv.* Spinning, 30*s.* the pound. Cocoons sell at 30*s.* to 36*s.* Silk this year, 25 *liv.* the pound, *setile*.

Padua.

One ounce of seed gives in common 30 lb. of cocoons, and 8 lb. of cocoons 1 lb. of filk : twenty sacks, of 80 lb. of leaves, are necessary to feed the worms of an ounce of seed. Price of gathering, 20*s.* the sack. The greatest trees give ten sacks of leaves each ; a tree of twenty years four or five sacks. It is not

* *Opuscoli Scelti*, tom. iii. p. 33.

the general custom to divide this business with the peasants. The common sort of silk worm is hatched about the 25th of April; the others the middle of June; but silk demands a more expensive operation in the latter season.

Venice.

There are three sorts of silk worms:—1. The common one, which casts its epiderm, or sleep as it is called, four times. 2. A sort known at Verona, that casts only three times; the cocoons smaller than those of the other sort. 3. The new sort mentioned by Count Carlo Bettoni, the seed of which hatch two or three times a year; but the others only once. The seed of the two first sorts cannot be hatched the same year it is dropped; but that of the third will hatch of itself, if it be not carefully kept in a cool place.

Bologna.

One hundred pounds of cocoons are made from 1 oz. of seed, and yield 7½ lb. to 8½ lb. of silk, of 12 oz. Price of cocoons, 20 to 25 *baiocca*. Silk, 34 *pauls*, at 6d. the pound.

TUSCANY.—*Florence.*

Making inquiries here concerning the new sort of silk worm, I found that they were not, as I had been before told, a new discovery in Italy, but known long ago; and, what is remarkable, is prohibited by law, in order to preserve the mulberry trees from being stripped more than once. The silk made from them is not more than half as good as the common, and very inferior in quantity also. They assert here, that by means of heat they can hatch the eggs of the common sort when they please, but not for any use, as they die directly; which is not the case with the new species, or that as it is called *di tre volte*.

Their contrivance for winding silk is very convenient, and well adapted to save labour; one man turns, for a whole row of coppers, the fires for those which are without the wall; and the closets with small boilers of water, for killing the animal in its cocoon by steam, are equally well adapted.

At Martelli, near Florence, on a farm of 190 *stiori* (34 acres) there are forty or fifty mulberries, enough for 1 oz. of grain, which gives 50 lb. or 60 lb. of cocoons, and 6 lb. or 7 lb. of silk. Price of cocoons this year, 2 *pauls* the pound; last year 2½; and in 1787 it was 3 *pauls*. In the culture of the trees they do not practise such attentions as the French in Dauphiné; they never dig about them, except when young; never wash the stems; they prune the trees when necessary, but not by any rule of years. The best sort is the wild mulberry, but it yields the least quantity; next, the white fruit.

In

In 1782, Sig. Don Gio. Agemi di Giun, prelate of the Greek Catholic church, on Mount Libanus, exhibited to the academicians Georgofili of Florence, the 4th of December, some filk worms, in number thirty-eight, part of which had already made their cocoons, and part ready to make them, as accustomed to do in his own country, with the leaves of the wild mulberry. The seed was hatched in October; the worms fed with leaves, procured from warm gardens; cocoons were made in November; mallow leaves were used also *.

MODENA.

The export of filk from the city 46,000 lb. at 38 liv. (4d. each); from the whole territory, 60,000 *zecchini*.

PIEDMONT.—*Pavesa*.

Immediately on entering the dominions of the King of Sardinia, within two miles of St. GIOVANNE, mulberries are found regularly every where, and continue to Turin. Seven-eighths of them are about twenty or twenty-five years old; some however are amongst the largest I have seen.

LOMBARDY POPLARS.

They are very scarce throughout Lombardy; there is a scattering between Modena and Reggio; and Count Tocoli, five or six miles from Parma, planted several thousands along a canal, on the birth of his daughter, for her portion; but there is not, in any part of Lombardy, any law which in such cases secures the property of the trees thus planted, to the child they are intended for; it is merely private confidence.

CLOVER.

PIEDMONT.—*Cbentale*.

Such is the power of climate united with the advantages of irrigation, that clover is here mown for hay once after harvesting the corn it grew with; the hay is not of the best quality, but useful.

MILANESE.—*Milan to Pavia*.

On the rich dairy farms, the cows are fed much on clover. The red sort is sown, which wearing out, white clover comes so regularly, that the country people think the one sort degenerates into the other.

* *Corso*, vol. iii. p. 123.

Vicenza.

They sow 12 lb. of seed per *campo* with wheat; it is cut twice the first year, yielding 1 *carro* each cut; the second year it is mown thrice: price 44 liv. the *carro*, which is 100 *pesi*, of 25 lb.

Padua.

Sow 12 lb. *grosso* per *campo* (14 lb. or 15 lb. per English acre) it gives three *carri*, each 1000 lb. at three cuts (1½ ton the acre English;) but they have crops that go much beyond this.

F I G S.

PIEDMONT.—*Nice to Coni.*

On this range of the Alps, there are, in favourable situations, a great quantity of fig trees; and the extreme cheapness of the fruit must be of no trivial importance in supporting the people, not only while ripe but dried.

H E M P A N D F L A X.

PIEDMONT.—*Chentale.*

A *giornata* (to an acre as 7440 to 7929) produces 200 lb. for the proprietor, and as much for the farmer; and some crops rise to 650 lb. They gather the female hemp from the 25th of July to the 4th of August: the male the beginning of September. Of some pieces I was informed that a produce not uncommon was 30 *rubbi* of female, and 17 of male, worth 4½ liv. to 5 liv. the *rubbio*, both of the same price; and also 25 to 30 *mine* of seed, if well cultivated; but if not, 12 to 15. The *mine* 35 lb. and the price 4½ liv. to 5 liv. the *mine*. The common calculation is, that a *giornata* is worth 150 liv. to 200 liv. which may be called 10l. per English acre. Their contrivance for steeping is very simple and effectual: there are many square and oblong pits with posts in them, with open mortises for fixing poles to keep down the hemp, which is vastly preferable to our fods and stones.

Turin.

They sow 3 *mine* (45 lb. of wheat), and get 30 *rubbi*, at 4 liv. 10s. to 5 liv. the *rubbio* gross; but ready for spinning 12 liv. 10s. the finest; the second quality is 7 liv. 10s.; and the third 5 liv.; besides 3 *mine* of seed, at 2 liv. each. This product is above 8l. the English acre.

MILANESE.

MILANESE.—*Mozzata*.

Winter flax is here esteemed the properer for land that is not watered; they sow it the middle of September; they have had it in this country two years only, and call it *lino ravagno*. It gives a coarser thread than spring flax, but a greater quantity, and much more seed. The price of the oil 22*s.* the pound, of 28 oz.; of the flax, ready for spinning, 25*s.* or 26*s.*; of the thread, 4 liv. and 4½ liv. A *quartaro* of seed is necessary for a *pertica*, for which it returns eight times the quantity of seed, and 20 lb. of flax ready for spinning, at 25*s.* the pound.

Codogno.

When they break up their clover lands they sow flax on one ploughing, which is worth rent 20 liv. and crop 40 liv. per *pertica*, being 24 lb. of 28 oz. and seed three times more than sown. Much winter flax now green.

VENETIAN STATE.—*Bergamo*.

Winter flax green in October.

ECCLESIASTICAL STATE.—*Bologna*.

The territory of Bologna produces from 12 to 14,000,000 lb. of hemp. They manure for it highly with dung, feathers, the horns of animals, and silk worms refuse. The best hemp-land is always dug; the difference between digging and ploughing is found to be very great. If ploughed, three earths are given; when the spade is used, the land is first ploughed and then dug. For this crop five or six yards are left *unsown* under the *rows of trees*. The soil agrees so well with this plant, that the crop rises ten feet high; they gather it all at once, leaving only a few stands for seed. It is watered in stagnant pools. A good product is from 100 lb. to 200 lb. of 12 oz. per *tornatura*, of half an acre. The price of the best is from 20 liv. to 27 liv. the 100 lb. At present 25 liv. (the English pound one-fifth larger than the Bolognese, and the livre of the Pope's dominions is ten to the *zecchin*, of 9*s.* 6*d.*) ready for combing. When ready for spinning, the price of the best is 12*s.* the pound; and they pay for spinning such 6*s.* to 15*s.* the pound. Near the city, I viewed a field famous for yielding hemp; no trees are planted across it, which is so common in the country in general; a sure proof of the pernicious tendency of that system; since in very valuable fields these people themselves reject the method. Little or no hemp on the hills near Bologna, but some autumnal flax for family use.

MAIZ.

PIEDMONT.—*Chentale*.

Maiz produces here 25 to 30 *mine*, which holds 47 lb. of wheat, and the price 2 liv. each. It is sown on three feet ridges.

Savigliano.

Maiz, in a good year, will yield three hundred fold, but in a dry one sometimes scarcely any thing.

Turin.

Made every where the fallow, which prepares for wheat.

Chivasso to Verceil.

A great deal of maiz through all this country, and all foul with grass and weeds, even to the height of two or three feet.

MILANESE.—*Milan*.

They sow much maiz, of the sort called *quarantino*, from its ripening in forty days (which however it does not). They sow it the middle of July, after wheat, which they cut the first week of that month. If the common maiz were sown at this time, they assert that it would yield no ripe seed: this is a very curious circumstance. The culture has been often recommended to England; if ever any thing were done, it must assuredly be with this sort; but even with this I should put no faith in the power of an English climate.

Mozzata.

They cultivate three sorts:—1. *Formentone maggengo*, sown the beginning of May, and reaped in October. 2. *Formentone agostano* o *formentone de ravettone*, because sown after taking off the rave or coleseed for oil, the end of May, and harvested the end of September. 3. *Formentone quarantino*, sown after wheat or rye, and cut the end of October.

Venice.

This plant was cultivated in the Polesine de Rovigo, towards 1560; and spread through Lombardy the beginning of the 17th century*.

* *Agost. Gallo*, Notes, p. 534.

OLIVES.

STATE OF VENICE.

On the banks of the Lago di Guarda are the only olives I have seen since I left the country of Nice; but the number is not considerable, and most of them are dead, or nearly so, by the frost of last winter, which made such destruction likewise in France.

Tuscany.

Near Florence, at Martelli, the product of a farm of 190 *stiori* was as follows: in 1786, thirty *barrils*. In 1787, it was no more than three. In 1788, it yielded eight. In 1789, it was twenty-five; but on an average ten; for which produce there are two hundred trees. They are dunged every two or three years, and dug about once in three years. They are reckoned to lessen the product of corn one-fifth; this is a notion of the country, but I believe very far from accurate. The average price of oil is 5 *scudi* per *barril*, of 150 lb. (11. 8s. 4d.); ten *barrils* amount to 14l. 3s. 4d.; and as there are about thirty-four acres in 190 *stiori*, the product of oil is 8s. to 9s. per acre: a sum that yields no very favourable impression of the culture:—and, divided amongst two hundred trees, it does not amount to 1s. 6d. a tree.

The plain of Florence is all lined into rows of these trees, with vines between and upon them; in some places, an espalier of vines between the rows of olives; and when all are well cultivated, the olives yield the greatest produce, next the wine, and then the corn. I viewed, near Florence, some fields, in which I found twenty olives on a *stiora* of land, but this is not common: and on a very bad stoney soil, though in the plain, I found that it took twenty trees, of twenty-five years growth, to yield a *barril* of oil. But in a fine soil, and with very old trees, a *barril* a tree has been known. Vines are suffered here also to run up the trees, but they reckon it a bad custom. The price of oil is more than doubled in forty years. Very few olives were lost by the last hard frost, but great numbers by that of 1709. Landlord's half produce, of some fields I viewed—oil, 10 *pauls*; grain, 7; wine, 1; in all, 18 *pauls* per *stiora* (21. 5s. per English acre.)

This year, 1789, the Grand Duke, for the first time, has given a gold medal, of the value of 25 *zecchini*, for the greatest number of olives planted; no claimant to be admitted for less than five thousand: in consequence of this premium, above forty thousand trees have been planted. It will be continued annually.

There is, in the Maremma, some remarkable instances of the vast age to which olives will attain: Sig. Zucchini, professor of agriculture at Florence, informed me, that, upon examining the hills in the middle of that tract, he found in the midst of woods, and almost over-run with rubbish, olives of so immense an age and magnitude, that he conjectures them to have been planted by the ancient Hetruscans, before the Romans were in possession of the country; there must, of course, be much uncertainty in any conjectures of this kind; but a great antiquity of these trees is undoubted.

RICE.

PIEDMONT.—*Ciglione to Verceil.*

They are now threshing rice with horses, as wheat in Languedoc;—thresh as much in the night as in the day:—meet also gleaners going home loaded with it. About five miles before Verceil, the rice-grounds are in great quantities: their culture, however, of this crop seems to want explanations. Here is, for instance, a great field, which was under rice last year, now left to weeds, with hogs feeding.—Why not sown with clover among or after the rice? They never plough but once for rice. The peasants are unhealthy from the culture; yet their pay not more than 24*s.* to 30*s.* a day. The soil of the rice-grounds here, is that of a fine loamy turnip sand; there is a mound raised around them, for the convenience of flooding at will.

Vercelli.

Rice is here reckoned the most profitable of all the cultivation of Piedmont; for it yields a greater value than wheat, and at a less expence. It demands only one ploughing, instead of several. Seed only 4 *mine*, at 1 liv. Watering, at 2 liv. 5*s.* Cutting, the end of July, 10*s.* The product is 60 *mine* rough, or 21 white; the latter at 4 liv. or 84 liv.; and 4 *mine* of a sort of bran, at 15*s.* or 3 liv.; in all 87 liv. (something under 5*l.* an acre). It is sown three years in succession; and the fourth a fallow; during which the land is dunged. The price of these lands, 500 liv. or 600 liv. the *giornata*. As rice can be sown only on land that admits watering at pleasure, I do not fully comprehend this account. Why, for instance, is not the land laid down for meadow, which evidently pays much better; and sells at a higher price? I suppose rice is ready money on demand, and meadows must be converted to cash circuitously. Good wheat land sells at 800 liv.

To Novara.

Passing the Sesia, which exhibits a bed of five times as much gravel as water, in three or four miles the quantity of rice is considerable: the stubble is green, and in wet mud; the sheaves thin. It extends on both sides the road for some distance; the whole inclosed by ditches, and rows of willow poplar pollards, as bad to the eye, as it can be to the health. One or two fields are not yet cut; it looks like a good crop of barley, being bearded. After Novara, see no more of it.

MILANESE.—*Milan to Pavia.*

The rice-grounds receive but one ploughing, which is given in the middle of March, and the seed sown at the end of the same month, in water to the seedsman's knees, which is left on the ground till the beginning of June, when the crop is weeded by hand, by women half naked, with their petticoats tucked to their waists wading in the water; and they make so droll a figure, that parties in pleasantry, at that season, view the rice-grounds. When the weeding is finished, the water is drawn off for eight days; and it is again drawn off when the ear begins to form, till formed; after which, it is let in again till the rice is nearly ripe, which is about the end of August, when it is reaped, or in the beginning of September; and by the end of that month, all is finished. Quantity of seed, the eighth of a *moggio* per *pertica*, produce 25 to 30 *moggio* rough, or $11\frac{1}{2}$ or 12 white. Price $37\frac{1}{2}$ liv. the *moggio*, (17l. 8s. per English acre), which produce is so large, that this minute I suspect the highest crop gained, and not an average one. The *moggio* of rice weighs 160 lb. of 28 ounces. The straw is of use only for littering cows; and the chaff, like that of all other grain, from a notion of its being unwholesome, is thrown on to the dunghill. They sow rice three years in succession, and then a course of something else. See *Courses of Crops*. The rice is rendered merchantable by being pounded in a mill by stampers, turned by a water-wheel.

In the great road there is a stone, at five miles from Milan, nearer than which it is prohibited to sow rice.

STATE OF VENICE.—*Verona.*

Of the produce of the rice-grounds in the Veronese, they reckon one-third for expences, one-third for water, and one-third profit.

PARMA.

Count Schaffienatti has sown rice, at Vicomero, eighteen years in succession, on the same land, without any rest or manure. Sow on 54 *biolcchi* 90 *staji*; and

and the produce 18 for 1. He digs the ground, as it is too marshy to plough it well; this costs 3000 liv. (each 2½d.) The straw sells at 80 liv. the load, of 80 *pesi*, of 25 lb. (4 lb. English). Oxen also eat it. Rice is reckoned to yield four times over more nett profit than any other husbandry; more even than watered meadows.

VINES.

PIEDMONT.—*Antibes to Nice.*

A singular cultivation of this plant surrounding very small pieces from six to twenty perches, trained up willow trees; and the scraps of land within them cultivated. What a sun must shine in a country where thick inclosures are counted by perches and not by acres.

Chentale to Racconis.

In rows at twelve to twenty feet, and appear like those of hops in Kent, supported on willow poles, twelve feet high, some of which take root, but are afterwards pulled up.

Chivasco.

Vines fastened from mulberry to mulberry, but not running up these trees, only up willows, &c. that are between them.

MILANESE.—*Mozzata.*

Half this country is lined with vines, and it is reckoned that they will damage to the amount of one-tenth of the produce: each *pertica* of vines, in a common year, will give 50 lb. of grapes, worth 6 liv. the 100 lb. of 28 oz. hail allowed for; and of this half is the peasants share, for the expence of culture. At Leinate, I viewed some wine presses, which are enormous machines, the beam of one is forty-five feet long and four feet square; and at the end, where the screw is, a stone of vast weight, for which there is a paved hole in the pavement, that it may keep suspended; the cuves casks, and all the apparatus great: the quantity of vines 1000 *pertica*. The seeds of the pressed grapes are kept till dry, and then pressed for oil; the seed of the grapes that yielded 70 *brenta* of wine will give 10 lb. of oil: it is used for lamps. The poor people, who bring their grapes to be pressed, pay one-twelfth of the wine. Price at present, 6 liv. the *brenta*; but only 3 liv. for what is last pressed: The first flow is trod out by men's feet. Common price, 10 liv. or 12 liv. the *brenta*.

VENETIAN STATE.—*Bergamo.*

From entering the Venetian territory, near Vaprio, the country is almost all planted in lines of vines, and the spaces between tilled for corn.

To Brescia.

This country, inclosed with hedges, besides which it is lined in stripes of vines, that are trained to low ash and maple trees, with mulberries at the end of every row; but the vines are not trained up these trees, though fastened to their trunks.

Vicenza.

The country, for 32 miles from Verona to Vicenza, except the watered parts, which are not a tenth of the whole, is lined into rows of pollards, each with three or four spreading branches, and at the foot of each two vines, many of them very old, with stems as thick as the calf of a man's leg; and many of the elms, maples, &c. are also old. They stand about a rod asunder, and the rows from twenty-five to thirty yards; and around the whole mulberries. Where the vintage is not finished, the vines hang in festoons from tree to tree, garnished with an astonishing quantity of bunches of grapes.

Vines, near Vicenza, produce 2 *maflati*, each of 240 bottles, per *campo*; the price 16 liv. the *maflato*; the *campo* here is larger than at Verona, amounting to near an English acre; this is about 17s. an acre; a produce very easily lost, in the damage done to the corn.

Padua.

The same husbandry, of pollards and vines, continues hither. They reckon that vines pay better than mulberries; but in the districts of Verona and Vicenza mulberries are more advantageous than vines. This does not correspond with soil, for that of Padua is deeper and richer, for the most part, than the other, and therefore less adapted to vines. In conversation with Abbate Fortis, on the wine of the Paduan, &c. being so bad, he says, it is owing merely to bad management in making. They tread the grapes with their feet; put the juice in a great cuve; and will keep it fermenting there even so long as fifteen days, adding every day more and more, till the strength is exhausted, and the wine spoiled; no cleanliness, in any part of the operation, nor the least attention in the gathering, or in the choice of the grapes. He further added, that Sig. Modena, a Vicentino cultivator at Vancimuglio, adjoining the rice-grounds, and consequently as little adapted as possible to vineyards, provided the soil and trees

trees were the cause of bad wines, makes that which is excellent, and which sell so high as 30 *l.* French per bottle: that Sig. Marzari, and Sig. il Conte di Porto, in the high Vicentino, with many others, as well as he himself, Abbate Fortis, has done the same with raisins from vines that run up the highest trees, such wine as sells from 20 *l.* to 35 *l.* French the bottle: and that some of these wines are so good, that the Venetian ambassadors, at different courts, use them instead of Madeira, &c.; and the wines of Friuli as those of Hungary, which they resemble; yet these vines are all on trees. He also observed, that it has been found, by experiment, that vines in these rich lands, trained near the ground, as in France, have yielded raisins and wine good for nothing; that the grapes even rot; that the land is too rich for the vines to have all the nourishment, unrivalled by the roots of the trees. It is very much to be questioned, if the experiments here alluded to, have been made with due attention: if the land is too rich for vines, plant them upon soils that are proper; and keep these low districts for grass and corn; but that vines, hidden from the sun amongst the branches of trees, can ripen properly to give a well-concocted juice, appears very dubious; and the fact of all the wine, commonly met with in this country, being bad, seems to confirm the reasoning.

ECCLESIASTICAL STATE.—*Bologna.*

All this country, where I have viewed it, is lined into rows of trees for vines, ten or twelve yards asunder, on the mountain, but more in the plain. But Sig. Bignami has his vineyards planted with *echalats* (poles), in the French way, about four or five feet square, and he finds that these always give better wine than the vines trained to trees; and the land by *tornatura* gives a great deal more wine; though each vine separately on trees, gives more than each in this method. The object, in this instance, was the goodness of wine; Sig. Bignami thinks the common method most profitable. The vines are now (November) trained and pruned, and turned down five or six feet and tied; if allowed to mount, they yield much fewer grapes. Vines on the mountains yield thrice the value of the wheat; and the double of all other productions, wheat included.

TUSCANY.—*Bologna to Florence.*

Vines in this route are planted differently from any I have yet seen. Some are in espaliers, drawn thinly across the fields; others are trained to small posts, through which, at top, are two or three sticks fixed to hold them up; others are in squares of five or six feet, and six or seven high, without such posts; but all in the arable fields are, generally speaking, in lines.

Florence.

Florence.

I here met with a case absolutely in point, to prove how mischievous trees are to corn, even in this hot climate.—A field under olives, which yielded in corn $6\frac{1}{2}$ for 1 sown, was grubbed, after which the common produce was 14 for 1. Now, as the olive is by no means one of the worst trees for corn, this shews the great loss that accrues from the practices I have noted throughout Lombardy. Yet, in common conversation here, as elsewhere, they tell you the injury is small, except from walnuts, which do more mischief than any other.

MODENA.

It appears to be a singular circumstance, that in the parts of this territory near the hills, corn pays better than wine; but in the plain, wine better than corn: I suspect that some mismanagement occasions this apparent contradiction. From Modena to Reggio the country is planted in rows, as in the Venetian State, &c. and the trees that support the vines being large, the whole has the appearance of a forest.

PARMA

From Reggio to Parma, the same system holds, but executed in an inferior manner. And from Parma to Vicomero, the trees that support the vines are pollards, with old heads, like many we have in England; contrary to the practice of the Venetian State, where they are kept young. To Firenzuolo, the vines are all buried in like manner; some here are planted for props, and the poles which serve as such are set in rows: in both methods the shoots are equally buried. A scattering of golden willow in the rows, I suppose for attaching the vines to the props. From Borgo St. Domino to Firenzuola, there is a decline both of vines and wood; the country is not as hitherto, regularly lined, and many large fields are without any; this is the more to be remarked, as here begin some inequalities of country, the gentle ramifications of the Appenines. To Castel Giovanne, most of the fields have no vines, only a scattering; shoots buried as before; but the inclosures have many pollards in the hedges, like the woodlands of Suffolk. From Piacenza, after passing the Trebbia, the rows of vines are thirty to forty yards asunder, with heaps of props, ten feet long, set like hop-poles; very few or no vines trained to trees.

PIEDMONT.—*Pavesè* *.

The country is all the way hill and dale; the flat of Lombardy finishing with the Dutchy of Piacenza. It is about half inclosed, and half with rows of

* The country ceded by Austria to Sardinia, part of the district of Pavia.

vines. There are also vineyards planted in a new method; a single row of vines, with a double row of poles, with others flat, so as to occupy four ridges, and then four to ten of corn. Some vine shoots buried for a few miles, but afterwards none. Near Stradella, the props appear like a wood of poles.

SAVOY.

The vineyards of Montmelian yield $1\frac{1}{2}$ *tonneau* per *journal*, which sell at $4\frac{1}{2}$ *louis* the *tonneau*: all, not in the hands of peasant proprietors, is at half produce.

SECT. IV.—OF IMPLEMENTS AND TILLAGE.

Coni.

The ploughs have a single handle, twelve or thirteen feet long, which throws the ploughman to such a distance behind, that his goad is fixed in a long light pole. The oxen are yoked in the same manner as ours; but the bow is of iron under the neck, and the pressure is received by two bits of wood. Some ploughs drawn by a yoke, others by two yokes of oxen.

Chentale.

The names which are given to the parts of a plough here are,—long handle, of fourteen feet, *stiva*; beam, *bura*; head, *cannonlia*; coulter rivetted to the share, *cultor*; share, *massa*; ground-rest, on which the share sheathes, seven feet long, *dentale*; earth-board, five feet long, *oralia*.

The Count de Bonaventura, in explaining to me their tillage, shewed the criterion, as old as Columella, of good ploughing, by thrusting his cane across the ridges, to see if rest-baulked. They plough mostly on the three feet ridge, forming and reversing at one bout; *i. e.* two furrows; the work strait. Use no reins, and have no driver, though the ploughman is above twenty feet from the oxen. Two small beasts cut a good furrow on the top of the old ridge, seven inches deep; and these ploughs, long as they are in the ground, certainly do not draw heavily.

The oxen, whether at plough or in the waggons, do not draw, as I conceived at first sight, by the shoulder, but in a method I never saw before, nor read of; they draw by pressing the point of the withers against the yoke, and not at all by the bows; and in examining them, the master and man contended that the strength of an ox lies there, and not in his shoulders, nor in his head,
or

or roots of the horns. It appears a strange practice; but it is yet stranger, that yoke a beast how you will, he does his work, and apparently without distress.

Chentale to Racconis.

They have here a most singular custom, which is that of shovelling all the moveable soil of a field, into heaps of a large load, earth, stubble, and weeds; they say, *per ingrassare la terra*.

To Turin.

The lands sown with wheat on three feet ridges, is worked fine with a machine of wood, at the end of a handle, formed nearly like a hoe. Wherever one sees these operose niceties, we may conclude the farms are very small.

Turin.

Plough with a pair of oxen, no reins, no driver; go to work at five in the morning, and hold it till night, except $1\frac{1}{2}$ hour at dinner; that is twelve hours work, and do a *giornata* a day, something under an acre, one bout to a three feet ridge, reversing.

Vercelli.

Price of a ploughing, $3\frac{1}{2}$ liv. per *giornata*, this is about 3s. 4d. per English acre.

MILANESE.—*Milan to Pavia.*

Hire of a ploughman and pair of oxen, 4 liv. a day; but if no food for the oxen, 6 liv. The ploughs here vary from those of Piedmont. The handles are not above half as long, and are called *stiva*; the beam, *buretto*; the coulter, *coltura*; the share, *massa*; the earth-board, *orechio*; the land-board, *orechini*. There is a most gross and absurd error in all the ploughs I saw, which is the position of the coulter, 18 or 20 degrees too much *to the land*; every one who is acquainted with the right structure of a plough, know that it should just clear the share; this great variation from the right line, must add greatly to the draft; and, in difficult land, fatigue the cattle.

Mozzata.

A light poor plough, the share with a double fin, but so narrow as to cut only four inches of the furrow; the heel of the plough is nine or ten inches wide; the work it performs is mere scratching; and the land they were sowing

with wheat, a bed of *triticum repens* and *agrostis stolonifera*. They have here a great opinion of digging; and a proverb, which says, *La vanga ha la punta doro*—The spade has the point of gold.

Codogno.

Here, as near Milan, the coulter is many degrees out of the line of the share; and the shares not more than four inches wide. Shocking!

Codogno to Crema.

The harrows in this country have handles to them of wood; I am amazed this practice is not universal; yet I never saw it before, except on my own farm.

VENETIAN STATE.—*Bergamo.*

In passing from Vaprio to this place, they are ploughing with a pair of oxen a-breast, and two horses before them in a line; wheel-ploughs; share five inches wide, and with a double fin. Near the town of Bergamo, I saw them ploughing a maize stubble for wheat, as full of grass almost as a meadow: a lad drives, and another stout one attends to clear the coulter from grass, &c.; the plough low on the carriage, with wheels; the breast all iron, and not ill formed; the fin of the share double, and about eight inches wide; the coulter nearly in the same direction as the share, but clearing four inches to the land side; two short handles. The furrow full nine inches deep; but crooked, irregular, and bad work. Notwithstanding this depth, they are great friends to the spade. From four to six for one, are common crops with the plough, but twelve to fourteen for one, are gained by the spade. There must be an inaccuracy in this; the difference cannot be owing merely to digging. We may be certain, that the husbandry, in other respects, must be much better.

Vicenza.

They here plough with four oxen in harness; many of them are of an iron-grey colour, with upright thick ugly horns. Some, however, are fine large beasts. Their plough is a strange tool; it is two feet four inches of Vicenza wide, (their foot is above $1\frac{1}{2}$ English): the share has a double fin, of a foot wide; consequently cuts half a foot in the furrow of more than two: has wheels, but no coulter. The land-board is called *fondelo*; the share, *vomero*; the earth-board, or breast, *arsedeman*; two short handles, the left *sinistrade*; the right *brancole*; the beam, *pertica*.

ECCLESIASTICAL STATE.—*Bologna.*

The coulter of the ploughs here stand 16 degrees from the right line; an incredible blunder, had I not before met with it in the Milanese. The beam, *pertica*; the handles, *stiva*; the mould-board, *assa*; the share, *gomiera*; the ground-rest, *nervo del focco*; the coulter, *coutre*.

TUSCANY.—*Florence.*

Here the beam is called *stanga*, and *bura*; the single handle, *stagola*; the body of the plough, *chicapo di aratro*; the share, *vangheggiola*. The body is hewn out of one large piece of wood; the fin double, and seven or eight inches wide.—I see no ploughing but on three feet ridge-work; reversing. They are now sowing wheat among tares, about six inches high, and plough both in together at one furrow, splitting the ridges with a double-breast plough. Oxen are used, that draw by the nape of the neck; then women, with a kind of half pick, called *marona*, work the ridge fine. No dressing of the seed against smut, &c.

PARMA.

The plough here has wheels; a single-breast, that turns to the right, and pretty well; a double finned share; and the coulter standing three inches to the left of the right line; drawn by two oxen, and two cows, with a driver.

SAVOY.

The oxen in the vale of Chamberry, draw not only by the horns, the yokes bound to them in the common way by leathers, but they have a double bar, one against the shoulders, as if the beast might be able to draw by both at pleasure.

MANURES.

Nice.

There is here a greater attention paid to saving and using night soil, than even in Flanders itself. There is not a necessary in the town which is not made an object of revenue; and reserved or granted by lease. In all the passages between the walls of gardens, in the environs, are necessaries, made for passengers. The contents are carried away regularly in barrels, on asses and mules; and being mixed with water, is given regularly to the vegetables of the gardens. The last winter having damaged many orange trees, they pruned off the damaged branches;

branches; and, to encourage them to shoot again strongly, the roots are dug around, and at the foot of each tree, a good mess of this invigorating manure is buried.

MILANESE.—*Milan.*

Night soil is greatly valued; it is bought at a good price, and spread on sowing wheat.

STATE OF VENICE.—*Vicenza.*

Sig. Giacomello has tried gypsum with success, broken small and calcined in an oven; also in a lime kiln; pulverises it finely, and sifts it. He remarks, that this is the chief use of calcination. Uses it for clover, lucern, and meadows; sows it as a top dressing on those plants, just as they rise; never buries it; mixes with sand, in order to spread equally; best to sow it when the land is dry; never when the plants are high and wet: quantity, 140 lb. *grosso*, upon 1250 *tavoli* of Treviso. If the land is bad, 300 lb.; and on middling, 200 lb. The effect on perennial clover, upon good land, is such, that any greater crops would rot on the ground. The same quantity of meadow that gives, without gypsum, a *carro* of hay, will, with that manure, spread about the 11th of November, produce 2 *carri* the year following; 3 *carri* the year after that; and on some meadows even to 4 *carri*. On old poor meadows, full of hard and bad grasses, this manure does not take effect so soon, and require a larger quantity of gypsum. (*Modi di aumentare i Bestiami*, 1777, p. 9.)

Sig. Pieropan informed me, that this manure has been used here for eight years, with much success, especially on all dry lands, but is good for nothing on wet ones; it is supposed to act by attracting moisture; 400 lb. of 12 oz. are spread on a *campo*; best for clover, wheat, or natural grass. It is said to force land so much, that it demands more dung, than if no gypsum had been spread.

Parma to Piacenza.

The dunghills in this country are neatly squared heaps.

CHAP. IV.

Of the Encouragement and Depression of Agriculture.

IN every country, through which an inquisitive man may travel, there can be no object of his inquiries more important than these—How far is government, and all the circumstances any way dependent on government, favourable or unfavourable to the culture of the earth? In truth, this question involves the whole circle of the political science. In so immense a range, it is in the power of an individual to give but a few sketches; which may afterwards, by some masterly hands, be melted into one harmonious piece. All the writings on political œconomy, which I have hitherto read, are filled too much with reasonings; yet experiment ought to be the only foundation. The facts which I have collected under this head, may be thus arranged:—1. Government.—2. Taxation.—3. Tythe.—4. Commerce.—5. Population.—6. Prohibitions.—7. Prices of commodities.

SECT. I.—OF GOVERNMENT.

It is a vulgar error, of no inconsiderable magnitude, to imagine, as many writers have done, that all arbitrary governments are the same. Whoever travels into countries under various forms of dominion, will find, from innumerable circumstances, that strong distinctions are to be made. The mildness of that of France can never be mistaken, which was so tempered by what *was* the manners of the people, as to be free in comparison with some others. Among the Italian states the difference will be found to be considerable.

The dominion of the House of Austria has been, by some, considered as hard, harsh, and unfeeling; till the admirable Leopold retrieved, by the wisdom and humanity of his government, in Tuscany, the character of his House. By the constitution of Milan, no new tax could be assessed or levied without the consent of the States; but Mary Theresa, about the year 1755, abolished the States themselves, which never were restored till Leopold came to the throne. It may easily be conceived, that such a system of despotism, was followed by measures that partook of its spirit; the general farms, by which I mean the farming of the taxes, which had from the beginning

ning of the present century been grievous to the people, became doubly so about the year 1753, when new ones were established. The administration of these farms was cruel, or rather infamous; and the ruin brought on numbers, for the smallest infraction of the regulations, spread a horror against the government through every corner of the Milanese, and tended strongly to occasion a declension in every source of national prosperity. The abolition of these farms, was the work of the Emperor Joseph; who heard such a reiteration of complaints against the farmers, whose great wealth * rendered them doubly odious, that he made such representations to his mother, as were effectual, and they were abolished about eighteen years ago. The present Emperor no sooner came to the throne, than he re-established that constitution, of which his mother had deprived the Milanese; the States and the Senate were restored; and also, the right of the States to appoint, what is called an orator to Vienna; in fact, an ambassador paid by themselves, to lay their representations before the court, without the intervention of a governor; a right which cannot be deemed unimportant. So that at present, the government of Milan, though by no means, such as can meet our ideas of freedom, is yet a kind of limited monarchy; for assuredly, that government which does not possess the power of taxation, must be esteemed such.

Count Firmian, while prime minister for the Milanese, was the author of a law, which, if it could be adopted in England, would be worth an hundred millions to us. It obliges all communities, &c. that possess waste or uncultivated lands, to sell them to any one that offers a price, in order to cultivate them; but they have the necessary liberty of publishing the price offered, and receiving proposals of a better; a fair auction takes place, and the lands become cultivated. Such possessors of wastes, are even obliged to let them at an annual rent *for ever*, by the same process, if any offer of rent is made to them, be it as low as possible. And the effect of this excellent law, has been the cultivation of many wastes, but not all; for, on returning from Mozzata to Milan, I passed a very extensive one, highly capable of profitable cultivation.

VENICE.

The celebrated government of this republic, is certainly the most respectable that exists in the world, in point of *duration*; since it has lasted without any material change, and without its capital being attacked for 1300 years,

* One of them now living, *Count de Crepy* (what a plague have such fellows to do with titles, unless to be written on the gallows on which they are hanged?) has between 20 and 30,000 *zecchini* a year in land. He was originally a poor boy, that sold cloth on a mule at Bergamo: one of his commis made 100,000 *zecchini*.

while

while all the rest of Europe, and of Asia, has been subject to innumerable revolutions, and the bloodiest wars and massacres, even in the very seat of empire. That duration is one of the first objects of a government, can never admit a doubt; since all other merit, however it may approach human perfection, is nothing without this. A well organized aristocracy, in which the greatest mass of the wisdom of the community, shall be found in a senate, seems, from the vast and important experiment of this celebrated republic, to be essentially necessary to secure the duration of any government. But the duration of an evil, becomes a mischief instead of an advantage; and that tyranny, which is so politically organized, as to promise an immense duration, is but the more justly to be abominated. The knowledge which will result from long experience, may probably teach mankind the right composition of a mingled form, in which the aristocratic portion will give duration and firmness; the democracy, freedom; and the conformation of executive power, energy and execution. Perhaps, the British government approaches the nearest to such a description.

The reputation of the Venetian government, is now its only support, a reputation which it does not at present merit in the smallest degree:—but as this idea is directly contrary to the accounts given by many travellers, I feel it necessary to premise, that I should think it merely trifling with the reader, to travel to Venice, in order to write dissertations in my own name, on the government of that republic; I do no more than hold the pen to report the opinions of Italians, on whose judgment I have every reason to rely; and, as exaggerated panegyrics have been published of the government of this State, it is fair to hear what may be urged on the other side of the question.

For twenty years past, there has been, in the republic, little more than a multiplication of abuses, so that almost every circumstance, which has been condemned in the arbitrary governments of Europe, is now to be found in that of Venice. And as an instance of the principles on which they govern their provinces, that of Istria was quoted. 1. To preserve the woods (which belong to the Prince), they prevent the people from turning any cattle into them; and if any man cut a tree, he is infallibly sent to the galleys, which has driven numbers out of that part of the country, where the woods are situated. 2. There are great opportunities of making salt, and the pans might be numerous, but it is a monopoly held by the State; they purchase a certain quantity, at 10*s*. French, per quintal, and if more than the specified quantity be made, it is lodged in their magazines on credit; and it may be two, three, or four years before the maker of it be paid. 3. Oil is a monopoly of the city of Venice; none can be sold but through that city; by which transit, an opportunity is taken to levy two ducats (each 4 liv. of France) per barrel, of 100 lb. and

five more *entrée* into Venice. 4. The coast abounds remarkably with fish, which are taken in almost any quantity; salt is on the spot, yet no use can be made of it, but by contraband, except for Venice singly. Thus a great trade in barrelled fish is foregone, in order to make a whole province beasts of burthen to a single city. 5. The heavy tax of a *stajo* of wheat, 130 lb. is laid on each head of a family, payable to the Venetian bailiff.

The practical result of such principles of government, confirms whatever condemnation theory could pronounce. Every part of the province, except a district that is more favoured than the rest in soil and climate, is depopulated; and so much are the woods preferred to the people, that parts, which once abounded with men, are become deserts; and the small population remaining in other parts, is every day diminishing. Dalmatia is in a yet worse state; for the greater part is a real desert:—in 1781 and 1782, no less than 12,000 families emigrated from the province. As I have not travelled in these provinces, I do no more than report the account given by well-informed Italians, though not residing in the territories of the republic. Before the government of this stern aristocracy is made the subject of exaggerated praise, let facts counter to these, be made the foundation.—But farther,

In the immediate operations of their government *at home*, the same weakness is found. Their poverty has increased with their revenue; they have raised the leases of the farmers general (for that odious collection is the mode they pursue) considerably: and near twenty years ago, they seized many of the possessions of the monks—that act for which the National Assembly of France has been condemned; but which, in the hands of numerous other governments, has either passed without animadversion, or has been commended. They did the same with the estates of some of the hospitals; but though such exertions have raised their revenue to 6,100,000 ducats, (1,054,000l.) yet they have found their affairs in such a situation, from bad management, that they have been obliged to sell the offices, which were in better times granted to merit; and committed a sort of bankruptcy, by reducing the interest of their old debts, from 5 to 3 per cent. Their credit is at so low an ebb, that, no longer ago than last June, they opened a subscription to fund 700,000 ducats; and, notwithstanding every art, could procure no more than about 300,000. Instead of their famous chain, which marked the wisdom of their oeconomy, their treasury is without a sol: and, to shew the apprehensions they have of provinces under their dominion throwing off their yoke, if they are at a small distance from the seat of government, the State makes a distinction in the political treatment of the Bergamasque and Brescian territories, from those nearer to Venice, in respect to privileges, punishments, taxes, &c.

No

No favourable feature of their government; and which shews that they think the people made for their city.

Perhaps, in the system of their finances, there is no circumstance that shews a decline of the real principles of their government, more than that of putting contraventions of the tobacco farm under the controul of the State inquisitors; which must have been done since M. de la Lande's second edition, as he mentions expressly their having nothing to do with the finances*. A conduct utterly ridiculous, in a State that once conducted itself with so much dignity.

Even in the delicate article of imparting the privileges of the aristocracy, to the nobility of Terra Firma, by whom they are in general detested, they have exhibited no doubtful symptoms of weakness, and want of policy. Reputation has been for many years the great support of their government; to manifest therefore such a want of policy, as strikes the most careless eye, is to suffer in the tenderest point. In 1774, they offered, gratis, a seat in the *consiglio maggiore*, to forty families, their subjects, who possessed 1200l. a year in land; provided there were four degrees of nobility, on the side of both husband and wife. Great numbers of families were eligible, but not ten in the whole would agree to the proposal. To offer a share in the legislature of so celebrated a republic, which in past periods would have been sought for with singular avidity, and to suffer the mortification of a refusal, was exhibiting a sign of internal weakness, and of want of judgment, adapted to reduce the reputation of their policy to nothing. The motives for the refusal are obvious: these families must of course remove to Venice; that is, to go from a city where they were old and respected, to another where they would be new and despised. Their estates also would not only suffer from their absence, but would be subject to new entails, and held by other tenures; no mortgage of them is allowable; and they are subject to peculiar laws of inheritance. In addition to these disadvantages, they are cut off from serving foreign princes; whereas the nobility of Terra Firma engage in such services. The Emperor's ambassador at Turin, is a subject of Venice; and one of the Pellegrini family, a field marshal in his army. Nor did the noblemen of Terra Firma refuse the favour, for these reasons alone; they dreaded the power which the State exerts over the noble Venetians, in sending them upon expensive embassies, in which they must spend the whole of their income, and, if that be not sufficient, contract debts to support themselves; for these reasons, and many others mentioned to me, which I did not equally understand, the government might have known before they made the offer, that it would subject them to the disgrace of a refusal. Long before the period in question, considerable additions had been

* *Voyage en Italie*, tom. viii. p. 7.

made to nobles of Venice, from the Terra Firma, but these honours were paid for; the price 17,000*l.* sterling; 7,000*l.* in cash, and 10,000*l.* lent to the State in perpetuity.

It is a curious circumstance, which marks undeceivingly the general features of the Venetian government, that about forty years ago, as well as at other periods, there were negotiations between the Court of Vienna and the Venetians, relative to an exchange of territory; the district of Crema was to have been given by Venice, for a part of the Ghiara d'Adda; the rumour of which, filled the people of the latter with the greatest apprehensions; they felt even a terror, at the idea of being transferred to the government of Venice; knowing, certainly, from their vicinity, that the change would be for the worse. This ascertains the comparative merit of two governments, that one is less bad than the other.

Upon the whole it may be remarked, that the wisdom of the Venetian government flows entirely from its interior organization, which is admirably framed; but abuses, in spite of this, have multiplied so much, that the first real shock that happens will overturn it. The fall of a government, however, which has subsisted with great reputation so much longer than any other existing at present, ought to be esteemed a great political loss, since the establishment of new systems is not at present wanted for the benefit of mankind, so much as the improvement of old ones; and if by any amelioration of the Venetian aristocracy, the benefit of the common people could be better secured, it might yet last in enlightened ages, as well as through those of darkness and ignorance.

BOLOGNA.

The government of the church, though in so many respects considered as one of the worst in Europe, ought not to be condemned too generally, for some discrimination should be used. Thus, in point of taxation, there are few countries that have less to complain of than this, as I have shewn in the proper place; and another circumstance was mentioned to me here, which proves that it is not the Pope's fault that it is not better—his Holiness was ready to abolish all fêtes, confining them to Sunday; and made the offer to the Senate of Bologna, if they would apply to him for the purpose; great debates ensued in that body, and it was determined not to make the application.

TUSCANY.

The government of the Grand Duke is, as every one knows, absolute; it admits therefore of no other discrimination, than what results from the personal character

character of the Prince. The circumstances I noted, during my residence at Florence, will shew that few sovereigns have deserved better of their subjects than Leopold: the details, however, which I shall enter into, will be very slight, not that the subject wants importance, but because many other books contain large accounts of this period; and especially the collection of his* laws, of which I wish to see a complete English translation, for the use of our legislators. The encouragements which this wise and benevolent sovereign has given to his subjects, are of various descriptions; to class them with any degree of regularity, would be to abridge that collection; a few, that bear more or less upon agriculture, I shall mention.

I. He has abolished tythes, which will be explained more at large, under the proper head.

II. He has established an absolute freedom in the trade of corn.

III. He has for many years contributed one-fourth part of the expence of buildings, in the Val de Nievole, and the lower province of Siena.

IV. He has this year made the culture of tobacco free, and engaged to buy all that is raised at 16*s*. the pound.

V. He has extinguished the national debt of Tuscany, which had existed from the time of the republic; for it deserves noting (in order for some future historian of the † modern ages, to mark the fact that the richest people run in debt the most) that the republic of Florence was one of the most commercial and rich in Europe. Two evils attended this debt, which the Grand Duke bent his operations to remove; *first*, three or four millions of it were due to foreigners, particularly to the Genoese, which carried much money out of Tuscany; and, *secondly*, there were distinct bureaus of collection and payment, for transacting the business of these debts. To remedy this double mischief, he first bought up all that part of the debt due to strangers, which he effected by the operation of a steady and wise œconomy; he then called on the Tuscan creditors to liquidate their debts, in the ratio of 3 per cent.; those who had money did it; and to those who had none, he lent the necessary sums; by this method, the distinct receipt and payment were abolished; the accounts were melted into the land-tax; and a number of reve-

* *Collezione di Leggi*, 8vo. 10 vols.—Siena.

† There is no work in the whole range of literature, more wanted than a Modern History of Europe, written philosophically; that is to say, with due attention to the progress of arts, sciences, and government; and with none paid to wars, battles, sieges, intrigues, generals, heroes, and cut-throats, more than briefly to condemn them: in such a work, the circumstance of the richest countries in Europe, having plunged themselves the deepest and most ruinously in debts, to support wars of commerce and ambition, should be particularly explained and condemned.

nue officers, &c. were reformed: nine or ten millions of crowns were thus extinguished.

VI. He has abolished all rights of commonage throughout his dominions, and given the powers of an universal inclosure.

VII. He has sold a considerable portion of the estates belonging to the sovereign, which has occasioned a great increase of cultivation, and the settlement in his dominions of many rich foreigners*.

VIII. In levying taxes, he has abolished all the distinctions of noble, ignoble, and ecclesiastical tenures; and all exemptions are set aside.

IX. He has built a magnificent lazaretto at Leghorn, and spent three millions on roads; but it would be entering too much into detail to specify his works of this sort; they are numerous.

The effects of such an enlightened system of government have been great; general assertions will not describe them so satisfactorily to a reader as particular instances. Sig. Paoletti, who has been *curé* of the parish of Villamagna forty-three years, assured me, that the forty farms, of which it consists, have risen in their value full 2000 *scudi* each in that time, which is about *cent. per cent.* of their former value; this great improvement has been chiefly wrought of late years, and especially in the last ten. It highly merits notice, that the countries in Europe, whose whole attention has been given exclusively to their commerce and manufactures, and particularly England, where the commercial system has been more relied on than in any other country, have experienced nothing equal to this case of Tuscany, the government of which has proceeded on a principle directly contrary, and given its encouragement *immediately* to agriculture, and *circuitously* to manufactures. In the tours I made through England, twenty years ago, I found land selling on an average at 32½ years purchase; it sells at present at no more than 28. While Tuscany therefore has been adding immensely to the money value of her soil, without trade and without manufactures (comparatively speaking to those of England), we have in the same period, with an immense increase of trade, been losing in our land. This fact, which is unquestionably true, is a curious circumstance for political analysis: it proves something wrong in our system. Population in Villamagna has augmented about a seventh, in the same period.

I shall not quit this article, without giving the preference decidedly to Leopold, Grand Duke of Tuscany, as the wisest of the princes, whose power admits a comparison in the age in which he lives: those are mean spirits, or

* By the general regulations for the district of Florence, of May 23, 1774, cap. 35. it is ordered, that all the landed property of the communities, kept in administration, or let, shall be sold or let on long lease. *Paoletti*, p. 85.

something worse, that will hesitate a moment between him and Frederic of Prussia: a sovereign no more to be compared to him, than the destroyers and tyrants of mankind are to be placed in competition with their greatest benefactors*.

MODENA.

In an age in which the sovereigns of Europe are incumbered, and some of them ruined by debts, a contrary conduct deserves considerable attention. The Duke of Modena, for ten years past, has practised a very wise œconomy: he is supposed, on good authority, to have saved about a million of *zecchins*, (475,000*l.*) and he continues to save in the same proportion. This is a very singular circumstance, and the effect of it is observable; for I was assured at Modena, that this treasure was much greater than the whole circulating currency of the Dutchy; and they spoke of it as a very mischievous thing, to withdraw from circulation and *use*, so considerable a sum, occasioning prices generally to rise, and every thing to be dear. By repeated inquiries, I found this dearness was nothing more than what is found in the States around, which have all experienced, more or less, a considerable rise of prices in ten years. But how could withdrawing money from circulation raise prices? It ought, on the contrary, in a country that has no paper-money, to lower them. That this effect did not follow, we may easily conclude, from these complaints. But the very persons who complained of this treasure could not assert, that money was more wanted in the Dutchy than before it was begun to be saved. They even gave a proof to the contrary, by affirming the rate of interest to be at present $4\frac{1}{2}$ per cent. only. Upon the whole, the effect is evidently harmless; and it is a most curious fact in politics, that a government can gradually draw from circulation a sum that in ten years exceeded the current coin of the State, without causing an apparent deficiency in the currency, or any inconveniency whatever. Conclusions of infinite importance are to be drawn from such a fact; it seems to prove, that the general modern policy of contracting public debts, is absurd and ruinous in the extreme; as saving in the time of peace, is clearly without any of those inconveniences, which were once supposed to attend it; and by means of forming a treasure, a nation doubles her nominal wealth, that sort of wealth, which is real or imaginary, according to the use that is made of it. The reputation, preventing attacks, is perhaps the greatest of all. How

* The conduct of this Prince in his new situation, to which he acceded at a most critical and dangerous moment, has been worthy of his preceding reputation, and has set a stamp on the rank in which I have supposed him. A few years more added to the life of Joseph, would have shivered the Austrian monarchy to nothing; Leopold has, by his wise and prudent management, every where preserved it.

contrary to the funding system, which carries in its nature, such a probability of present weakness, and such a certainty of future ruin !

PARMA.

The river from Parma to the Po has been surveyed, and might be made navigable for about 25,000*l.* sterling ; but to the honour of the government which has been diffused through so many countries by the House of Bourbon, no such undertaking can here be thought of. Don Philip's history, it is to be hoped, will be written by some pen that can teach mankind, from such an instance, of what stuff men are sometimes made, whom birth elevates to power. The present Duke spends too much money upon monks, to have any to spare for navigations.

PIEDMONT.

The House of Savoy has, for some centuries, possessed the reputation of governing their dominions with singular ability ; and of making so dextrous a use of events, as to have been continually aggrandizing their territory. The late King was among the wisest princes of his family, and shewed his talents for government in the practice of an enlightened and steady œconomy : it deserves no slight attention among the princes of Europe, in the present ferment of men's minds, whether there be any other criterion of a wise government. The late King of Sardinia saved 12,000,000 *liv.* ; paid off a great debt ; repaired all his fortresses ; adorned his palaces ; and built one of the most splendid theatres in Europe ; all by the force of œconomy. The contrast of the present reign is striking ; his present Majesty found himself in possession of the treasure of his predecessor. He sold the property of the jesuits, to the amount of 20,000,000 *liv.* ; he has raised 7 or 8,000,000 *liv.* by the creation of paper-money ; thus, without noticing the portions of the Queen and the Princess of Piedmont, he has received 40,000,000 *liv.* extraordinary (2,000,000*l.* sterling) : all of which has been lavished, and a debt contracted and increasing ; the fortifications not in good repair ; and report says, that his army is neither well paid, nor well disciplined. These features are not to be mistaken ; the King, though free from the vices which degrade so many princes, and possessing many amiable virtues, is of too easy a disposition, which exposes him to situations, in which œconomy is sacrificed to feelings—amiable for private life, but inconsistent with the severity of a monarch's duty.

It is a most curious circumstance in the King of Sardinia's government, that there is in this court, a great desire to sell the island of Sardinia. A treaty was opened with the Empress of Russia for that purpose, after she was disappointed in

in her negotiation with the Genoese, in the projected acquisition of Spazzie, and of Malta: but in all these schemes of a Mediterranean establishment, she was disappointed by the vigorous and decisive interference of the courts of Versailles and Madrid. One cannot have any hesitation in the opinion, that to improve this island, by means of a good government, would be more political than so strange a measure as its sale*.

I shall

* It may not here be useless to the reader, if I note some minutes taken at Turin, concerning that island, one of the most neglected spots in Europe; and which, of course, betrays the effects of a vicious system of government sufficiently, for conclusions of some importance to be drawn. The marshes are so numerous and extensive, that the *intemperia* is every where found; the mountains numerous and high; and wastes found so generally, that the whole isle may be considered as such, with spots only cultivated. Estates in the hands of absentees are large, the rents consequently sent away, and the people left to the mercy of rapacious managers. The Duke of Assinaria has 300,000 liv. a year: the Duke of St. Piera 160,000 liv.: the Marquis of Pascha as much; and many live in Spain. M. de Girah, a grandee, has an estate of two days journey, from Poula to Oleastre. The peasants in a miserable situation; their cabins wretched hovels, without either windows or chimnies; their cattle have nothing to eat in winter, but browsing in woods, for there are no wolves. The number of wild ducks incredible. Shooting them was the chief amusement of an officer, who was nine years in the island, and who gave me this account. Provisions cheap; bread, 1s. the pound; beef, 2s.; mutton, 2½s.; a load of wood, of 10 quintals, 4s. 9d. sterling. Wheat is the only export; in this grain the lands are naturally fertile, yielding commonly seven or eight for one, and some even forty. No silk; and oil, worse than easy to conceive. They have some wine almost as good as Malaga, and not unlike it. The great want of the island, is that of water: springs are scarce, and the few rivers are in low bottoms. To these particulars, I shall add a few from Gemelli.

Sardinia is a real desert, for the most part; and where cultivated, it is in the most wretched manner: every thing consumed in the island (except the immediate food of the day), is imported, even their flax* and wood, from Corsica and Tuscany; the miserable inhabitants know not even the art of making hay; their crops are destroyed by wild animals, for the very notion of an inclosure is unknown. Leases are annual†. The tunny fishery produces from abroad, 60,000 *scudi*‡.

They have no mules; and the cities, as they are called, have been supplied with corn from abroad; with plenty in the island, which could not be brought, for want of mules to convey it; insomuch, that a fourth part of the corn has been offered as a payment, for carrying the other three parts to the towns, and not accepted||.

In 1750, there were about 360,000 souls in Sardinia; in 1773, they were 421,597; so that in twenty-three years, the increase was 61,597; occasioned by an institution called *Monti Frumentarii*, which furnishes seed on credit to the poor farmers, who cannot afford to buy it§. Cattle in the island, in 1771; cows, &c. 1,710,259; oxen for work, horses, mares, and calves bred for work, 185,266**.

* *Rifiorimento Della Sardegna Gemelli*, 4to, vol. i. p. 50.

|| *Ib.* p. 5.

§ *Ib.* p. 46.

** *Ib.* p. 350.

† *Ib.* p. 2.

‡ *Ib.* p. 54.

I shall not quit the subject of Italian governments, without remarking, that such deserts as Sardinia, under a despotic monarch, and Istria under a despotic aristocracy, are to be classed among political lessons. The tendency and result of such cases, are sufficient to shew the principles of government: the leaders should speedily correct the neglect of such systems. When people are well governed, THINGS CANNOT BE THUS. The wisdom applicable to the present moment, is to watch the colour and spirit of the age; to compound; and to yield, where yielding is rational.

Working oxen,	-	-	-	-	97,753
Cows in calf,	-	-	-	-	13,999
Calves, <i>ammanfite</i> ,	-	-	-	-	8,080
Horses and mares,	-	-	-	-	66,334
Hogs,	-	-	-	-	152,471
Oxen and calves, <i>rudi</i> ,	-	-	-	-	58,770
Cows and cow-calves, <i>rudi</i> ,	-	-	-	-	166,468
Goats,	-	-	-	-	378,201
He-goats,	-	-	-	-	42,597
Sheep,	-	-	-	-	768,250
Rams and wethers *,	-	-	-	-	143,502
					1,895,525

The miserable state of this island, will best appear from calculating the number of acres. Templeman tells us, that it contains 6,600 square miles. England he makes 49,450; the real contents of which, in acres, are 46,915,933; Sardinia, in the same ratio, contains 6,261,782: the number of goats and sheep in the island, is 1,332,550; there is, therefore, about one sheep or goat to every five acres. Without viewing the island, I will venture to pronounce, that it would, without cultivation, support a sheep per acre; above six millions; and reckoning the fleeces at 3s. 4d. each, the wool only would produce one million sterling a year. It is said, the King of Sardinia offered to sell the island, to the Empress of Russia, for a million sterling. The purchaser of it would have a noble estate at twice that price, seeing the immense improvements of which it is capable. The fee simple of most of the estates are to be purchased at a very easy rate, as well as the sovereignty. The climate would admit of wool, as fine as the Spanish; if it were made into an immense sheep-walk, with culture only proportioned to their winter support, it would yield an exportable produce of full two millions sterling annually.

Gemelli mentions the island being capable of producing as fine wool as Spain; they rear them only for supplying their tables with lambs and cheese; and to have skins for dressing the people; and no attention whatever is paid to the quality of the wool, which is good for nothing, but to make the Sardinian serges.

* Gemelli, tom. ii. p. 148.

ACADEMIES.

There is an agrarian society at Turin, which has published four volumes of papers: a patriotic society at Milan, which has published two volumes; neither of these societies hath any land for trying experiments. At Bergamo, Brescia, and Verona, there are also societies,—without land. At Vicenza, the republic has given four *campi* for the purpose of experiments. At Padua, I viewed the experimental garden, of about a dozen acres, under the direction of Sig. Pietro Arduino; the expence of which is also paid by the State. At Florence, a similar one, under the conduct of Sig. Zucchino; this was in good order.

Venice.

Perhaps no country ever had a wiser plan of conduct than the Venetians, in appointing a gentleman, supposed, from his writings, to be well skilled in agriculture (Sig. Arduino), to travel over all their dominions, to make inquiries into the state of agriculture; its deficiencies, and practicable improvements; and the idea was, that the academies of agriculture, in all the great towns of the republic, would have orders to take such steps to effect the improvements, as would most conduce to national prosperity. The plan was admirable; all, however, depends on the execution; as far as the academies are concerned, I should expect it to fail, for none of them are established upon principles, that will allow us to suppose their members skilled in *practical* husbandry; and, without this, their ideas and their experiments would of course be visionary.

It will not, perhaps, be improper to remark, under this head, that there is at Venice, an institution appointed by the State, which, though not an academy, has much the same object, but with more authority, called the *Beni Inculti*. Their origin was about 1556, and in 1768 they added the *Deputati di Agricoltura*. I was informed, that they had once great power, and did much good, but that now there lies an appeal from their tribunal, to the council of forty, which is attended with a considerable expence, and has done mischief.

SECT. II.—OF TAXATION.

PIEDMONT.—*Chentale*.

The land-tax, near the town, is 6 liv. or 7 liv. per *giornata*, per annum, on such land as sells at 800 liv. to 1000 liv.; which may be called about one-sixth of the rent, supposing land to pay 5 per cent. The landlord, of course, pays his own capitation of 1 liv. for himself, and every one in family: and the tenant pays as much for his family, being more than seven years old. But what is abundantly worse, he pays 25*s*. a head for each cow, and 50*s*. for each ox. Salt is a monopoly: the ratio per head, is 8 lb. for every one in family, after five years old; 4 lb. for each ox and cow; and 1 lb. for each sheep and goat; and 1 lb. more per cow, for those that give milk: the price, 4*s*. the pound.

Turin.

No capitation in Turin. The *entrées* are 8*s*. the *brenta*, 50 bottles of wine; 4 *den.* per pound, meat. Salt, 4*s*. the pound. Hay, 1*s*. the *rubbio*, to the Hotel de Ville, for lighting the city. No taxes except the *entrées*. The land-tax in common, is 4 liv. the *giornata*. Salt, 8 lb. each ox or cow, and 4 lb. each goat, sheep, or calf, at 4*s*.; and if they want more, the rest 2*s*. the pound; also 8 lb. per head of the family. Capitation in the country, 1 liv. per head, for all above seven years.

*The following is a correct Detail of the Revenue of the King of Sardinia, which in 1675 amounted only to 7,000,000 liv. (306,250*l*.)*

	Liv.
Customs—excise and salt,	14,000,000
Land-tax, which is between 7 and 8 per cent.	6,000,000
Since 1781, the clergy their thirds of the land-tax,	500,000
Addition to the land-tax, for the Nice road,	100,000
Contribution of the Jews,	15,700
Sale of demesne lands falling into the crown,	800,000
Fees in the courts of justice,	110,000
Salt in the provinces of Alexandria and Novara,	65,460
Carry forward,	21,591,160

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	Brought forward,	Liv.	21,591,160
Enrollment of all public acts and contracts,	-	-	276,100
Post-office,	-	-	300,000
Lotteries, royal powder works, glass houses, mines, salines, &c. about	-	-	3,000,000
Total, exclusive of the last article,	-	*	22,167,260
	Sterling,	-	£. 1,158,813

Expenditure.

Interest of the public debt,	-	-	* 4,738,840
Army,	-	-	† 10,700,000
Carry forward,	-	-	15,438,840

* The following is another account:—

Sale,	-	-	3,504,233 liv.
Tobacco,	-	-	2,415,297
Dogana,	-	-	2,377,673
Carne,	-	-	1,240,230
Carta bollata,	-	-	249,103
Polveri,	-	-	215,788
Contravenzioni,	-	-	22,340
Gabella giacchi,	-	-	137,389
Reggio lotto del seminario,	-	-	388,487
Gran cancelleria,	-	-	162,537
Dritti insinuazioni,	-	-	44,647
Regie poste,	-	-	394,214
Domaniali,	-	-	442,884
Casuali,	-	-	1,449,548
			<u>13,044,370</u>

Sardinia, in 1783, produced 1,318,519 liv.; the population 450,000 souls.

* The debt amounts to 58,000,000 liv. originally at 4, now at $3\frac{1}{2}$ per cent. and the fund is above par. There are 17,000,000 of bank notes, which at first bore 4 per cent. then 2, and now none.

† Guards,	-	-	1,397
Fifteen regiments of the line,	-	-	17,784
Twelve regiments of militia,	-	-	7,200
Legion,	-	-	1,718
			<u>28,099</u>
Invalids,	-	-	2,400
Sundries,	-	-	1,141
			<u>31,640</u>
Infantry,	-	-	3,289
Cavalry and dragoons,	-	-	34,929
			<u>7,536</u>
Of which foreigners,	-	-	

	<i>Liv.</i>
Brought forward,	15,438,840
Ordnance,	359,044
Fortifications, royal houses, and public buildings,	1,458,998
Household,	2,500,000
Collection of the revenue,	3,572,398
King's privy purse,	711,425
	24,040,705
	Sterling, - £. 1,202,035

If, as calculated, there are 2882 square French leagues in the King's continental dominions, the revenue amounts to 10,920 liv. per league; and as the population is 3,000,000, it is 8 liv. 2½s. per head. Savoy produces 2,432,137 liv. Piedmont, 11,444,578 liv.; and the provinces acquired by the treaties of Worms and Vienna, 1,972,735 liv.

MILANESE.—*Milan.*

One liv. on the manufacture of each hat; duty of 7½s. per lb. on the export of silk. There are *entrées* at the gates of Milan, upon most commodities. Wine pays 42s. the *brenta*, of 96 *bocali*, of 28 oz. or something under a common bottle. Salt in the city, is 12s. the pound, and 11½s. in the country. No person is obliged to take more than they think proper.

Mozzata.

The land-tax throughout the Milanese, is laid by a *cadaastre*, called here the *cenfimento*; there was a map and an actual survey of every man's property taken parochially, and a copy of the map left with the community of every parish. It was finished in 1760, after forty years labour, under the Empress Maria Theresa. The lands were all valued, and the tax laid at 26 *deniers*; 1s. 6 *den.* per *ecu*, of the fee simple. There is at Milan itself, as well as in the accounts of travellers, strange contradictions and errors about this tax; as soon as I arrived, I was told, even by very sensible men, that it amounted to full 50 per cent. of the produce. Mons. de la Lande, in his *Voyage en Italie*, tom. i. p. 291, 2d edit. says, that it is one-third of the revenue, or half the *produit net*; this is the confusion of the *economistes*, with that jargon which seems to have enveloped the plainest objects in a mist; for one-third of the revenue, is not half the *produit net*. Mons. Roland de la Platerie asserts, that it exceeds the half of the *revenu net*; but all these accounts are gross errors. The instruction of the commissaries originally, who valued the country, was to estimate

mate it below the truth; of which these gentlemen seem to have known nothing. Nor do they take into their consideration, the improvements which have been made in near thirty years; for the *censimento* remains as it was, no alteration having been made in the valuation; when they talk therefore of 50 per cent. or a third, or any other proportion, they must of necessity be incorrect, for no one knows the value of the whole Dutchy at present; nor can tell whether the tax be the fifth or the tenth, or what real proportion it bears to the income. When I found the subject involved in such confusion by preceding travellers, I saw clearly that the way to come at truth, was to enquire in the country, and not depend on the general assertions so common in great cities. At this place (Mozzata) therefore, I analyzed the tax, and by gaining a clear comprehension of the value, rent, produce, and tax of 100 *pertiche*, was enabled to acquire a fair notion of the subject. Under the chapter of *arable products*, I have stated that 100 *pertiche* yield a gross produce, in corn, wine, and silk, of 1836 liv.; of which the proprietor receives for his share, 785 liv. This land would sell for 128 $\frac{2}{3}$ liv. per *pertica*; or 12,833 liv. for the 100. Now this 100 *pertiche*, of such a rent and value, pays *censimento* 15 $\frac{1}{2}$ s. per *pertica*, or 77 liv. This tax is paid by the farmer in the above-mentioned division; but if there were no tax, the landlord would receive so much more as his portion; add therefore the tax, 77 liv. to his receipt, 785 liv. and you have 862 liv. for the sum which pays 77 liv.; which is 8 $\frac{2}{3}$ s., or 8l. 18s. per cent. or 1s. 9d. in the pound. So utterly mistaken are the people of Milan, and the French travellers, when they talk of 50 per cent, and one-third, and one-half, the *produit net* and *revenu net*! And it is farther to be considered, that only half this payment of 77 liv. goes to the sovereign; for half is retained by the communities for roads, bridges, and other parochial charges; and in some cases, the partial support of the *curées* is included. When this happens, the payment of 1s. 9d. in the pound, is in lieu of our land-tax, tithe, and poor-rate; three articles, which in England amount to 8s. or 10s. in the pound. But though the burthen is nothing, compared with those which crush us in England, yet 1s. 9d. is too heavy a land-tax—it is throwing too great a burthen upon landed property, and lessening too much the profit which should arise from investing capitals in it; for it must be remarked, that this proportion is that of the improvements included; this 1s. 9d. might probably, twenty-five years ago, be 3s. or 3s. 6d.: it is improvements which have lowered it to 1s. 9d. at the present moment. Those silent and gradual improvements, which take place from what may be termed external causes, from the growing prosperity, and rise of prices in Europe in general. Were 8 $\frac{1}{2}$ per cent. to be laid on new investments, not one livre would be invested. Lands belonging to ecclesiastics and hospitals are exempted.

It

It must be sufficiently apparent, that this *censimento* must vary in every parish in the dukedom; it varies proportionably to the variation, in the accuracy of the original valuation; and to the improvements that have been made; and to many other circumstances. As it is at present, the land-owners are well satisfied, for the tax, though too heavy, is certainly not enormous; and it gives an accuracy and security to property that is of no slight value; as all mutations are made in reference to the parochial map of the *censimento*. They very properly consider any alteration in it, as a certain step to the ruin of the Milanese. It has been reported, that the Emperor has entertained thoughts of having a new valuation; but the confusion and mischief that would flow from such a scheme, might go much farther than the court could imagine; and might be attended with unforeseen consequences. In these opinions, they are certainly right; for of all the curses that a country can experience, a variable land-tax is perhaps the heaviest.

Beside the direct land-tax of the *censimento*, there is a capitation that is included in the roll, like the custom in England, of putting several taxes into one duplicate or assessment. On 15,173 *pertiche* of land, at Mozzata, there are three hundred and eighty-two heads payable, and one thousand three hundred souls. It may be calculated, that 100 *pertiche* pay the capitation of three persons, or 22½ liv.

Codogno.

The watered dairy lands, taken in general, sell here at 300 liv. the *pertica*; and lets, *net* rent, at 10 liv.; the tenant paying all taxes.—The account is thus:

Rent to landlord,	-	-	-	-	10 liv. 0s.
Water-tax for distribution,	-	-	-	-	1 0
<i>Censimento</i> to the prince and the community,	-	-	-	-	2 5
					13 5

The 1 liv. we must throw out, being local, and then 12 liv. 5s. pays 2 liv. 5s. which is $18\frac{9}{13}$ per cent. or 3s. 8d. in the pound; this is therefore doubly higher than in the poor country of Mozzata; one would suppose beforehand, that the case would be so. The improvements in the Lodizan are not modern; probably there are no other but such as are common to the whole Dutchy, and which arise from the general prosperity of Europe, rather than from any local efforts in this district; but in much poorer countries, the improvement of waste spots, and a husbandry gradually better, are more likely to have this effect; the fact, however, is so; there was no such difference as this, when the *censimento* was laid, which sufficiently proves that the husbandry of the poor districts, has advanced much more in thirty years, than that of the rich ones, which

which, once well watered, admitted of little more. We may remark, that even here the accounts which Messrs. de la Lande and Roland de la Platerie have given, are gross exaggerations.

Treviglio.

Upon 400 *pertiche* of land and six houses, the *censimento* amounts to 430 liv. Rent, 7, 9, and 12 liv. the *pertica*, average 8 liv. or 3440 liv. about 12 per cent. or 2s. 4d. in the pound.

Upon the land-tax in general in the Milanese, I should observe, before I quit that country, that in 1765 it was calculated* that the Duchy of Milan contained 14,000,000 of *pertiche*, and that lakes, roads, &c. deducted, there remained 11,367,287, of which 5,098,758 were arable. It has been further stated†, that the *censimento* of the Duchy, raised,

	liv.	s.	den.
For the Emperor, - - -	5,106,004	11	9
Suppose as much more for the communities, - - -	5,106,004	11	9
	<u>10,212,009</u>	<u>3</u>	<u>6</u>

Eleven millions of *pertiche*, paying ten millions of livres, is about 18 *soldi* per *pertica*‡.

In the *Epilogo della Scrittura Censuaria della Lombardia Austriaca*, MS. sent by Count Wilizek, prime minister of the Milanese, to the Board of Agriculture at London, the general valuation of the territory, in the *censimento*, is thus stated:

Milano, - - -	40,139,942 <i>scudi</i> .
Mantova, - - -	14,487,423
Pavia, - - -	6,173,740
Cremona, - - -	15,112,042
Lodi, - - -	11,014,562
Como, - - -	<u>2,153,626</u>
Value of the fee simple, - - -	<u>89,081,337</u>

If therefore the tax produces but about ten millions of livres, it is not more than 2 per cent. on the above capital.

* *Bilancio dello Stato di Milano presentato a S. E. Conte di Firmian*, 12mo.

† *Delle Opere del Conte Carli*, tom. i. p. 232.

‡ Upon the taxes of the Milanese, it should be in general noted, that every father with twelve children living, or eleven living and his wife with child of a twelfth, is exempted from all personal taxes; and upon all others favoured 45 per cent. that is to say, on all royal, provincial, municipal imposts. *Delle Opere de S. Conte Carli*, 8vo, tom. i. p. 254.

STATE OF VENICE.—*Brescia.*

The land-tax amounts to $1\frac{1}{2}$ liv. per *jugero*, about 7d. the English acre; but there is a tax on all products, viz. wheat and rye pays the *soma* or *sacco*, equal to 2 *stara* of Venice, or 88 lb.; $11\frac{1}{2}$ *soldi* equal to 18 *soldi correnti*; this tax (*senza portata in Villa*) is about 5d. English the bushel. Millet, maiz, &c. pays 12 *soldi* the *sacco*, of or about $3\frac{1}{4}$ d. the English bushel. Hay, the *carro* of 100 *peze*, pays 12*s.* $3\frac{1}{2}$ *den.* or about 6d. a ton English.

Verona.

Meadows, throughout the Veronese State, pay a tax of hay to the cavalry; furnishing it at a lower price than the common one. The land-tax here, 24*s.* for each *campo*, or about 10d. the English acre; besides which, there are *entrées* (*dazio*) for municipal charges on all products, amounting to about 2 per cent. of the value; also others payable to the State. Hay pays 24*s.* the *carro*: the sack of wheat, 10*s.*: of maiz, $1\frac{1}{2}$ *s.* There is a most mischievous tax on cattle; a pair of oxen pays half a *zecchin* per annum; cows something less; and sheep also pay a certain tax per head.

Vicenza.

Salt is 6*s.* the pound: flesh, 3*s.* *entrée* (*dazio*): a sack of wheat, $4\frac{1}{2}$ *s.*: of flour, of 180 lb. 3 liv. 2*s.*: and every thing that comes in pays. Land-tax, 2 liv. the *campo*: and a poll-tax of 2 liv. a head, on all above seven years old.

Padua.

The land-tax, 20*s.* the *campo*; and 10*s.* or 15*s.* for the expences on rivers; but this tax uncertain.

Venice.

No tax on cattle in the Polesine. The land-tax on all the Terra Firma; arable, 2 liv. the *campo*: meadow, 1 liv. 10*s.*: woods, 10*s.* The sale of meat in the city is a monopoly, no other persons but those appointed being allowed to sell. *Entrées* are paid on every thing that comes in; on wine it is heavy. Tobacco is a monopoly, at a heavy price, reserved by the State throughout all the Venetian territory, producing 50,000 ducats a month, and guarded by the same infamous severities, that are found in other despotic countries. Salt the same. Inheritances, except from a father, pay 5 per cent. on the capital; a woman pays this cruel imposition, even upon her receipt from a father, or a husband. Infamous tyranny! The city of Venice pays about one-sixth of the whole revenue.

ECCLESIASTICAL STATE.—*Bologna.*

Taxation, at Bologna, is one of the most remarkable circumstances I met in Italy. I had often read, and had been generally given to understand, that the government of the church was the worst to be found in Italy; what it may be in the Roman State, I know not, but in the Bolognese it is amongst the lightest to be found in Europe. There are four objects of taxation:—1. The Pope. 2. The municipal government of the city. 3. The schools in the university. 4. The banks, &c. of the rivers, against inundations. Of all these, there is some reason to believe that the Pope receives the least share. The common land-tax is only 2 *baiocchi* the *tornatura*; this is about 2d. the English acre. Lands subject to inundations, pay 5 *baiocchi* more. Among the imposts levied in the city, wine only, and a few trifles, belong to his Holiness. Salt, fish, meat, cocoons (for there is a small duty upon them), and grinding corn, these are municipal; and among the heaviest articles of the cities expence, is the interest of about a million sterling of debt. In general, the revenue of the *dogana*, or custom-house, is applied towards supporting the lectures in the public schools, and the botanical garden. There is a light capitation, which is paid in the country, as well as in the city. Upon the whole, the amount of the taxes of every kind is so inconsiderable, that the weight is felt by nobody, and was esteemed to be exceedingly light by every person I conversed with.

TUSCANY.—*Florence.*

Every circumstance concerning taxation, in the dominions of the most enlightened Prince in Europe, must necessarily be interesting. If the reader is at all conversant with the works of the *economistes*, with which France was so deluged some years ago, he will know, that when they were refuted in argument, upon the theory of a universal land-tax, to absorb all others, they appealed to practice, and cited the example of Tuscany, in which dominion their plan was executed. I was eager to know the result; the detail I shall give, imperfect as it is, will shew on what sort of foundations those gentlemen built, when they quitted the fields of speculation and idea. I was not idle in making inquiries; but the Grand Duke has made so many changes, no year passing without some, and all of them wise and benevolent, that to attain an accurate knowledge is not so easy a business as some persons may be inclined to think. The following particulars I offer, as little more than hints to instigate other travellers, whose longer residence gives them better opportunities, to examine a subject of so much importance to the bottom.

The estimation on which the present land-tax is collected is so old as 1394; of course it can bear no proportion with the value or with the produce of the land; whatever improvements are made, the tax remains the same; much of it has been bought off in payments made by proprietors, who have paid at different periods certain sums, to be exempted forever from this tax; a singular circumstance, and which marks no inconsiderable degree of confidence in the government. That part of this tax which is paid to the communities for roads, &c. is not thus redeemable; and, without any breach of faith, the tax has received additions; it amounts to more than one-tenth of the net rent. A capitation from 1½ liv. to 4 liv. per head (the livre is 8½d. English). Every body pays this tax in the country, except children under three years of age; and all towns, except Florence, Pisa, Siena, and Leghorn, which are exempted, because they pay *entrées*. Nothing is paid on cattle. Butchers in the country pay a tax of 1*sc.* per lb. (something under ½d. per lb. English); in a district of seven miles long by four or five broad, the butcher pays 500 *scudi* per annum to the prince; as this tax implies a monopoly, it is so far a mischievous one; and even a countryman cannot kill his own hog without paying 5 liv. or 6 liv. if fold. Bakers pay none. Customs on imports, and some on exports, are paid at all the ports and frontiers; and the *entrées* at the above-mentioned towns are on most kinds of merchandize and objects of consumption. Houses pay a *dixme* on their rents. Stamped paper is necessary for many transactions. The transfer of land and houses, by sale or collateral succession, pays 7 per cent. and legacies of money and marriage portions the same—a very heavy and impolitic tax. There is a *gabelle* upon salt, which however the Grand Duke sunk six months ago from 4 to 2 *gras*; he, at the same time, made Empoly the only emporium, but as that occasioned much expence of carriage, he augmented the land-tax enough to pay the loss, by selling it to the poor only at 2 *gras*; the rich pay the same, but with the addition of carriage. Tobacco was also a revenue, and, with salt, paid 1 liv. per head on all the population of the Dutchy, or one million. The *entrées* above-mentioned are not inconsiderable; a calf pays 6 liv.; a hog, 5 liv. per 100 lb.; grain nothing; flour, 10 *soldi* (there are 20 *soldi* in 1 liv.); beans, 2*sc.*; a load of hay, of 3000 lb. 4 liv.; of straw, under 2000 lb. 2 liv. Houses are also subjected to an annual tax; Florence pays 22,000 *scudi* a year to it: it may be supposed to be levied pretty strictly, as the Grand Duke ordered all his palaces, the famous gallery, &c. to be valued, and he pays for them to the communities. What a wise and refined policy! and how contrary to the exemptions known in England! When the capitation was increased in France, in a bad period, Louis XIV. ordered the Dauphin himself, and all the princes of the blood, to be rated to it, that the nobility might not claim exemptions. Lotteries, to my great surprize, I found established here. The domains

domains of the sovereign were considerable. It was always a part of the policy of Leopold, to sell all the farms that could be disposed of advantageously; he sold many; but there are yet many not disposed of. I found it a question at Florence, whether this were good policy or not? A gentleman of considerable ability contended against these sales, judging the possession of land to be a good mode of raising a public revenue. The opinion I think ill founded; if it be carried to any extent (and if incapable of being so, there is an end of the question), the loss by such possessions must be great: every estate is ill managed, and unprofitably, and usually badly cultivated, in proportion to the extent.— And when this evil extends to such immense possessions, as are necessary to constitute a public revenue, the inquiry is decided in a moment; and it must on all hands be agreed, that there cannot be a more expensive mode of supporting the sovereign.

From the preceding catalogue of taxes, which is very far from being complete, it may easily be concluded, that Mons. de la Lande was not perfectly accurate in saying, “Le projet du gouvernement est de réduire toutes les taxes dans la Toscane à un impôt unique, qui se percevra sur le produit net des terres.” This is the old assertion of the *economistes*; but if it be the project of government, it is executed in a manner not at all analogous to such a system; for there is hardly a tax to be met with in Europe, which is not to be found in Tuscany. I was told, however, that the Grand Duke had formed an opinion, that such a scheme would be beneficial if executed; but from his conduct, after a reign of twenty years, it is evident that his good sense convinced him that such a plan, whether good or bad in theory, is absolutely impracticable. He may have made it a subject of conversation; but he was abundantly too prudent to venture on so dangerous, and what would prove so mischievous an experiment.

The Grand Duke gave to all the communities, the power of taxation for roads, bridges, public schools, reparations of public buildings, salaries of schoolmasters, &c. Among the long list of taxes, however, there are no excises on manufactures, such as leather, paper, &c.

The whole revenue of the Grand Duke may be estimated at one million of *scudi*, (5s. 8d. each), paid by about a million of souls, spread over a thousand square miles of territory; or 283,333l.: this is the received opinion at Florence; but there are reasons for believing it under the truth, and that, if every kind of revenue whatever were fairly brought to account, it would amount to 400,000l. a year. At this sum the Tuscans must be considered amongst the lightest taxed people in Europe; for they pay but 8s. a head. The people of England pay six times as much.

MODENA.

The common calculation in the Modenese is, that all taxes whatever equal one-fifth of the gross produce of the land; as the duties are various, such calculations must necessarily be liable to a good deal of error. In the *censimento*, or *cadaſtre* of the Dutchy, estates are valued at the half of their real worth, and the tax is laid at 1 per cent. annual payment of their fee simple; this amounts to 6s. in the pound land-tax; but it may be supposed that the real payment does not amount to any thing so enormous as this. It appears by the *censimento*, that in the plain, there are 67,378 pieces of land, and 738,809 *biolca*. The total revenue of Modena at present amounts to 300,000 *zecchini*, (142,000*l.*); 200,000 of which go to the Duke's treasure, and 100,000 for rivers, roads, bridges, communities, &c. Among the taxes, many are heavy, and complained of; beside the land-tax above-mentioned, the general farms amount to 55,000 *zecchini*: all corn must be ground at the Duke's mills, and 3 *pauls* paid for each sack of 300 lb. of 12 oz. There is a *gabelle* on salt; it sells, white, at 22 *bol.* the pound; black, 8 *bol.* Snuff is 1 *paul* the pound. They have stamped paper for many transactions. Every horse pays 20 *bol.*; each ox, 10 *bol.* Sheep and hogs, 4 *bol.*: and if any person be absent from the State for the term of a year, he pays an absentee tax. *Entrées* are paid by every thing that comes into the city; a load of wood, 20 *bol.*; a sack of wheat, 3 *bol.*; a load of hay, 20 *bol.*; of faggots, 20 *bol.* All meat, 4 *bol.* the pound. Wine, 14 *liv.* the measure, of 12 *poids*, each 25 lb. of 12 oz. Coffee, $\frac{2}{3}$ *paul* per lb. The sale, &c. of land, pays 5 per cent.

PARMA.

The revenues of this dukedom are two-thirds of those of Modena. The land-tax is 50*s.* the *biolca*, (about 9*d.* an acre). The peasants pay a capitation; this varies, if they are enrolled, or not as soldiers. A man pays 18 *liv.* (each 2*d.*) per annum, if not a soldier, but 3*½* *liv.* or 4 *liv.* if enrolled. A woman, not the wife of a soldier, 15 *liv.* These soldiers, or rather militia-men, pay also 24*s.* a month, as an exemption from service. He is enrolled for twenty-five years, after which he has the same advantage. He pays also but half for his salt, 6*s.* only the pound; others 12*s.* A metayer, who is a soldier, pays all sorts of taxes, about 60 *liv.*

SECT. III.—OF TITHE AND CHURCH LANDS.

PIEDMONT.

Throughout this principality, tithe is an object of no account. I made inquiries concerning it every where: the greatest part of the lands pay none; and upon the rest it is so light, as not to amount to more than from a twentieth to a fiftieth of the produce*.

MILANESE.

In the country from Milan to Pavia, no tithe of any kind, but the *curées* are supported by foundations. In the village where I made inquiries into the dairy management,—the *curée* has 21 *stara* of rice, 12 *stara* of rye, 4 *stara* of wheat; 300 lb. of the best hay from one large farm; and he has some other little stipends in nature; the amount small, and never paid as a tithe.

At Mozzata, the tithes, as every where else, are so low as to be no object; grain pays, but not on all land; it is confined to the lands *antiently in culture*†; for even the ancestors of these people were much too wise, to allow the church to tax them in such a spirit, as to take tithes of new improvements. Never did such a measure enter their heads or hearts! The titheable lands are small districts; are near to the villages that have been in cultivation many centuries; and in some of these, tithe is not taken on all sorts of corn; only on those sorts antiently cultivated. The variations in this respect are many; but on whatever it is taken, it never exceeds a sixteenth, usually from one-seventeenth to one-twentieth; and of such as are levied, the whole does not belong to the *curée*, not more perhaps than one-fourth; one-half to the canons of some distant church, to which the whole probably once belonged; and one-fourth sold off to some lay-lord, with a stipulation to repair the church. The variations are so great, that no general rule holds; but they are every where so light, that no complaints are heard of them.

The church lands seized by the late Emperor in the Milanese, were of immense value. From Pavia to Plaisance, all was in the hands of the monks; and the Count de Belgiofo has hired thirty-six dairy farms of the Emperor, by

* Tithe in Sardinia is heavy. They pay one-tenth of the corn, and one-ninth of that one-tenth for threshing, and one-fifth of the one-tenth for carriage.—*Risiorimento della Sardegna*, tom. i. p. 146.

† A remarkable passage in Giulini deserves noting here; under the year 1147, he gives *finalmente si proibisce a ciascheduno effigere le decima dai terreni di nuove coltivati*, tom. v. p. 459.

which

which he makes a profit of 50,000 liv. a year. The revenue that was seized, in the city of Milan only, amounted to above 5,000,000 liv.; and they say in that city, that in the whole Austrian monarchy, it amounted to 20,000,000 florins.

At Codogno, and through most of the Lodizan, tithe is so very inconsiderable, that it is not worth mentioning; the expression of the gentlemen who were my informants.

STATE OF VENICE.

In the district of Verona, mulberries pay no tithe; wheat one-twelfth in some places, in others less; maiz, millet, &c. from one-fifteenth to one-thirtieth; but if for forage only, they pay none, no more than vetches, chich-pease, millet, &c. as it appears by a late memoir printed at Venice*. Meadows pay a light tithe, because they are taxed to find hay for the cavalry at an under price. In the district of Vicenza, tithe varies from the one-tenth to the forty-first. About Padua, wheat alone pays the tenth: vines a trifle, at the will of the farmer: mulberries, sheep, and cows, nothing.

ECCLESIASTICAL STATE.—Bologna.

Tithes are so low throughout all the Bolognese, that I could get no satisfactory account of the very small payments that are yet made to the church; every one assured me, that they were next to nothing; but that in the Ferrarese they are high.

TUSCANY.

In many of the countries of Europe, the seizure of estates and effects of the jesuits was a rapacious act, to the profit of the Prince or State; in Tuscany it was converted to a more useful purpose. The Grand Duke set aside these revenues for forming a fund, called the *Ecclesiastical Patrimony*, under the management of a new tribunal, that should enable him gradually to abolish tithes. This great reform, equally beneficial to every class of the people, has been in execution for many years: as fast as the present incumbents of the livings die, tithes are abolished for ever; their successors enter into possession of moderate salaries, payable out of those funds, or raised by an addition to the land-tax; and thus an impost, of all others the most mischievous, is speedily extinguishing, and the agriculture of Tuscany improving in consequence; proportionably to such extinction of its former burthens. Many monasteries have been also suppressed, and their revenues applied, in some cases, to the same use; but this

* *Raccolto di Memorie Delle Pubbliche Accademie*, 8vo, 1789, tom. i. p. 197.

has not been attended with effects equally good: the lands are not equally well cultivated; nor do they yield the same revenue as formerly; for the farms of the monks were in the best order, administered by themselves, and every thing carefully attended to. This was not the case, however, with convents of women, who being obliged to employ deputies, their estates were not equally well managed.

A proposition was lately made by the court, to sell all the glebes belonging to the livings, and to add to the salaries of the *curées* in lieu of them; but at a public meeting of the Academia di Georgofili, Sig. Paoletti, a *curé* in the neighbourhood of Florence, a practical farmer, and author of some excellent treatises on the art, made a speech so pointedly against the scheme, fraught with so much good sense, and delivered with so much eloquence, that the plan was immediately dropped, and resumed no more; this was equally to the honour of Paoletti and of Leopold. When good sense is on the throne, subjects need not fear to speak it.

The lightness of the old tithes may be estimated, by the payment which forty farms at Villamagna yield to the same Sig. Paoletti, the *curé*, which is 40 *scudi* (each 5s. 8d.), and this is only for his life; to his successor nothing in this kind will be paid. Having mentioned Sig. Paoletti, and much to his honour, I must give another anecdote of him, not less to his credit; after his Sunday's sermon, it has long been his practice to offer to his audience, some instruction in agriculture; which they are at liberty to listen to, or absent themselves, as they please. For this practice, which deserved every commendation, his archbishop reproved him. He replied, that he neglected no duty by offering such instruction, and his congregation could not suffer, but might profit, and innocently too, by what they heard. A sovereign that receives so much merited praise as the great Leopold, can well afford to hear of his faults; first, why did he not reprove this prelate, for his conduct; and by so doing encourage an attention to agriculture in the clergy? secondly, why did he not reward a good farmer, and worthy priest, and excellent writer, with something better than this little rectory? Talents and merit in an inferior situation, which might be better exerted, are a reproach, not to the possessor, but to the prince.

The Grand Duke took the administration of the lands belonging to hospitals and the poor into his own hands also; but the effect of this has not, in the opinion of some persons, been equally beneficial; the poor remain as they were, but the revenue gone; this, in the diocese of Florence only, amounted, it is said, to three or four millions of *scudi*: if this be true, the mischief attending such revenues must be enormous; and taking them away, provided the *really useful* hospitals be supported, which is the case, must be beneficial. Too many and

great establishments of this nature nurse up idleness; and create, by dependency and expectation, the evils they are designed to cure. Poverty always abounds in proportion to such funds; so that if the fund were doubled, the misery it is meant to prevent would be doubled also. No poor in the world are found at their ease by means of hospitals, and gratuitous charities; it is an industry, so steady and regular, as to preclude all other dependence, that can alone place them in such a situation, as I have endeavoured to shew in my remarks on France.

The patrimony of almost all the parishes in Tuscany, consists in lands assigned them: the rector is administrator and guardian of them; and, both by law and his oath on induction, he is strictly obliged to maintain and support them; and also to manure them, and to increase the produce*.

DUTCHY OF MODENA.

No tithe here; a voluntary gift only to the *sub-curée*. The ecclesiastical lands have been largely seized here, as well as every where else in Italy; but the Duke gave them to the towns, to assist them in the expence of the municipal administration.

DUTCHY OF PARMA.

No real tithe; the payments in lieu very small, and not proportioned to the crop; a farm pays a *stajo* of wheat, (about 88 lb. English), two parcels of raisins, and twenty faggots, between the two *curées*.

Upon this detail of the tithe paid in Lombardy, &c. one observation strongly impresses itself, that the patrimony of the church is, under every government in Italy, considered as the property of the State, and seized or assigned accordingly. It highly merits attention, that in the free countries of Holland and Switzerland, (exempt at least from the despotism of a single person), the same principle has been adopted; with what reason therefore can the *first* National Assembly of France be reproached, as guilty of a *singular* outrage, for doing that which every neighbour they have (England and Spain only excepted) had done before them; and which may possibly, in a better mode, be followed in every country in Europe? They have in Italy rid themselves of tithes, though not half, perhaps not upon an average a third, of the burthen they amount to in England, where their levy has been carried to a

* Paoletti *Pensieri sopra l'Agricoltura*, 8vo. Firenze, 1789. p. 50. 2d edit.

much greater height. If the legislature of that kingdom would give a due encouragement, they will remove such burthens gradually, and with wisdom. All I conversed with in Italy, on the subject of tithes, expressed amazement at the tithes we are subject to; and scarcely believed that there was a people left in Europe, who paid so much: observing, that nothing like it was to be found even in Spain itself.

SECT. IV.—OF MANUFACTURES AND COMMERCE.

PIEDMONT.

Two-thirds of the rice raised is exported: I met carts loaded with silk and rice on the great road to France; and demanding afterwards concerning this trade, I was informed, that the cost of the carriage was 30*s.* per *rubbio*, to Lyons or Geneva, and 3 *liv.* to Paris.—The following are the principal exports:

	<i>Liv.</i>
Unwrought silk, - - - - -	17,000,000
Damasks, &c. - - - - -	500,000
Rice, - - - - -	3,500,000
Hemp, - - - - -	1,500,000
Cattle, - - - - -	2,000,000
	24,500,000

Oil and wine from Nice; walnut-oil, cobalt, lead, and copper ore, add something. France commonly takes 10,000,000 *liv.* in silk, and England 5,000,000 *liv.* of the finest sort. The balance of trade is generally supposed to be about 500,000 *liv.* against Piedmont; but all suppositions of this sort are very conjectural; such a country could not long continue to pay such a balance; and, consequently, there cannot be any such. By another account, wheat exported is 200,000 sacks, at 5 *eymena*; 5000 sacks of rice, at 3 *eymena*; hemp, 5000 quintals; and 10,000 head of oxen.

Turin.

The English woollen manufacturers having sworn, at the bar of the House of Lords, that the French camblets, made of English wool, rivalled the English camblets in the Italian markets, and even undersold them, I had previously

determined to make inquiries into the truth of this assertion. I was at Turin introduced to Sig. Vinatier, a considerable shopkeeper, who sold both. His account of the French and English camblets was this; that the English are much better executed, better wrought, and more beautiful; but that the French are strongest. I desired to know which were the cheapest. The English, he said, being much the narrower, it was a matter of calculation; but he supposed the consumers thought the English cheapest, as where he sold one French, he sold at least twenty-five English. He shewed me various pieces of both, and said, that the above circumstances were applicable both to stuffs mixed of wool and silk, and also those of wool only. I asked him then concerning cloths: he said, the English ordinary cloths were much better than the French, but that the French fine cloths were better than the English. These inquiries brought me acquainted with an Italian dealer, or merchant as he is called, in hardware, who informed me, that he was at Birmingham in 1786 and 1789, and that he found a sensible diminution of price; and that the prices of English hardware have fallen for some years past; and that, for these last three or four years, the trade in them to Italy has increased considerably. He has not only bought, but examined with care, the fine works in steel at Paris, but they are not equal to the English; that the French have not the art of hardening their steel; or if hardened of not working it; for the English goods are much harder and better polished, consequently, are not equally subject to rust.

MILANESE.

In the fifteenth century, the trade of this country was considerable. In 1423, the territory of Milan paid to the Venetians:

Milan,	-	-	-	900,000 ducats.
Monza,	-	-	-	52,000
Como,	-	-	-	104,000
Alessandria,	-	-	-	52,000
Tortona and Novara,	-	-	-	104,000
Pavia,	-	-	-	104,000
Cremona,	-	-	-	104,000
Bergamo,	-	-	-	78,000
Parma,	-	-	-	104,000
Piacenza,	-	-	-	52,000
				<u>1,654,000</u>

And

And they sent to Venice, at the same time, cloths to the following amount :

	Cloths.	Ducats.
Alessandria, Tortona, and Novara, at 15 ducats,	6000 -	90,000
Pavia, at 15 ducats,	3000 -	45,000
Milan, at 30 ditto,	4000 -	120,000
Como, at 15 ditto,	12,000 -	180,000
Monza, at 15 ditto,	6000 -	90,000
Brescia, at 15 ditto,	5000 -	75,000
Bergamo, at 7 ditto,	10,000 -	70,000
Cremona, at 40½ ditto,	40,000 -	170,000
Parma, at 15 ditto,	4000 -	60,000
	<u>90,000</u> -	<u>900,000</u>
Duties and warehouses,	- -	200,000
Canvas,	- -	100,000

And at the same time the Milanese took from Venice annually :

Cotton raw, 5000 <i>miliari</i> ,	- -	250,000 ducats.
Cotton spun,	- -	30,000
Wool of Catalonia, 4000 <i>miliari</i> ,	- -	120,000
French wool,	- -	120,000
Gold and silk fabrics,	- -	250,000
Pepper,	- -	300,000
Soap,	- -	250,000
Cinnamon,	- -	64,000
Ginger,	- -	80,000
Slaves,	- -	30,000
Sugar,	- -	95,000
Materials for embroidery,	- -	30,000
Dying woods,	- -	120,000
Indigo, &c.	- -	50,000 *

The produce of silk amounts to 9,000,000 liv. ; nineteen-twentieths of which, at least, are exported.

Count Verri, in his *Storia di Milano*, mentions that the Milanese, only sixty miles by fifty, feeds 1,130,000 inhabitants ; and exports to the amount of 1,350,000 *zecchini* †, viz. silk, 1,000,000 ; cheese and flax, more than 200,000 ; corn, 150,000 (the *zecchini* being 9s. 6d. the sum of 1,350,000 equals 641,200l.)

*. *Giulini*, vol. xii. p. 362.

† *Verri*, tom. i. p. 236.

But

But this is changed much, for the export of cheese alone is calculated now at 9,200,000 liv. which is above 306,000l. sterling.

Bergamo.

The woollen manufacture at this place is of great antiquity, and it is yet considerable. Its trade in silk is great; they buy from Crema, Monti, Brianza, Ghiara d'Adda, and in general the confines of the Milanese; this has given their silk trade a greater reputation than it deserves, for their commerce is more extensive than their product. They have been known to export silk, to the amount of near 300,000l. sterling a year. Here also is a fabric of iron and steel, of some consideration in Italy; but none of these objects are in a stile to be interesting to those who have been at all conversant with the fabrics of England. If, however, the manufactures of Bergamo are compared with those of the Milanese, they will be found considerable.

Brescia.

This is a very busy place; the city and the vicinity, for some miles, abound with many fabrics, particularly of fire-arms, cutlery, and other works of iron. They have many silk and oil mills; and some paper fabrics, that succeed well. But their commerce of all sorts has declined so much, as not to be compared at present, to what it has been in former times.

Verona.

Here is a woollen fabric that still maintains some little ground; though the declension it has suffered is very great. I was assured, that 20,000 manufacturers were once found in a single street; this, I suppose, may be an exaggeration, but it at least marks that it was once very great: now there are not 1000 in the whole city; in the time of its prosperity, they used chiefly their own wool, at present it is imported.

In the Veronese, they make one million of pounds of silk, of 12 oz.; and rice nearly to as great an amount.

STATE OF VENICE.—*Verona.*

Many years past, the only great import of camblets was from Saxony; but after the war of 1758, the English ones established themselves, and there is now no comparison between the quantity of English and French; of the latter, very few, but the import of the former is considerable.

Vicenza.

Vicenza.

They sell nine pieces of English camblets to one of French. A woollen manufacture was established here three years ago, under the direction of Thomas Montfort, an Englishman. It works up their own wool, and also Spanish. Spinning a pound of fine wool, 50*s.* and the women earn 15*s.* a day; weavers, 2 *liv.* Count Vicentino has established a fabric of earthen ware, with a capital of 9000 ducats; Mr. Wedgwood's forms (originally however from Italy) are imitated throughout. A good plate, plain, 12*s.*; ewer and basin, 12 *liv.*; small tea-cup and saucer, quite plain, 15*s.*; tea-pot, 4 *liv.*; vase, 18 inches high, with a festoon and openings for flowers, 60 *liv.* It meets with no great success, and no encouragement from the government.

Venice.

In the fifteenth century, Venice employed 3345 ships, great and small, and 43,000 sailors*. The chief export at present, is silk; the second, corn of all sorts; the third, raisins, currants, and wine. Glass is yet a manufacture of some consequence, though greatly fallen, even of late years. Tuvan for beads, is, however, yet unrivalled. The glass of Bohemia undersells, from the cheapness of wood, and possibly from that of provisions (my informant speaks), not only the glass of Venice, but that of Carniola also. The chief export from Venice, of fabrics, is to the Levant; velvets and silks go there to some amount. The trade of the whole Venetian territory, does not employ above 250 ships of national bottoms.

ECCLESIASTICAL STATE.—*Bologna.*

All the silk of the Bolognese, is here made into crape and gauze; the crapes are, perhaps, the finest in the world, price considered. The gauzes also are very beautiful: they measure by the *braccio* of forty inches; they sell at 26 to 36 *baiocchi* the *braccio*; (10 *baiocchi* equal 6*d.* English). White handkerchiefs are also made of 7 *liv.* each. Crapes and gauzes employ seven or eight thousand people.

TUSCANY.—*Florence.*

The woollen manufacture was amongst the greatest resources of the Florentines, in the time of their republic.

* *Ragionamento sul Commercio, &c. della Toscana*, 8vo, 1781, p. 21.—*Marino Sanudo tra gli Scrittori Italici del Muratori*, tom. ii.—*Conte Carli delle Monete*, tom. iii. dis. 7.—*Mebegan Tableau de l'Hist. Moder.* tom. ii. epog. 7.

In 1239, the friars umiliate came to Florence, to improve the manufactory of woollen cloth. They made the finest cloths of the age; the best, of the wool of Spain and Portugal; the seconds, of that of England, France, Majorca, Minorca, Sardinia, Barbary, Apulia, Romana, and Tuscany*. In 1336, there were at Florence, more than two hundred shops, in which woollens were manufactured, which made from 70 to 80,000 pieces of cloth yearly, of the value of 1,200,000 *zecchini*; of which, the third part remained in the country for labour; and employed more than 30,000 souls; and thirty years before that, the number was much greater, even to 100,000 pieces, but coarser, and of only half the value, because they did not receive, nor know how to work the wools of England. In 1460, they were augmented to two hundred and seventy-three, but the quality and quantity unknown†. From 1407 to 1485, was the period of its greatest prosperity. In 1450, Cosmo of Medicis, was the greatest merchant in Europe. From the year 1365 to 1406, the republic of Florence, in wars only, expended 11,500,000 *zecchini*‡.

I was assured at Florence, but I know not the authority, that 1*l.* a week, on the wages of the woollen manufacturers only, built the cathedral; and that at a single fair, in the time of the republic, woollen goods to the amount of 12,000,000 of crowns have been sold.

Giuliano and Lorenzo de Medici sent into England Florentine manufacturers of wool, to exercise their trade, for the account of those princes to take advantage of the cheapness of wool on the spot; from which circumstance, the Florentine writer infers, that the English thus gained the art of making cloth§.

These particulars, it must be confessed, are curious, but I must draw one conclusion from them, which will militate considerably with the ideas of those persons, who insist that the only way of encouraging agriculture is to establish great manufactures. Here were, for three centuries, some of the greatest fabrics, perhaps the greatest in Europe; and Pisa flourished equally; and yet the establishment and the success of a vast commerce, which gave the city immense riches, the signs of which are to be met with at this day, in every part of it, had so little effect on the agriculture of Tuscany, that no person skilled in husbandry can admit it to be well cultivated; and yet the improvements in the last twenty years are, I am assured, very great. Here then is a striking proof, that the prodigious trade of the Tuscan towns had little or no effect in securing a flourishing agriculture to the country. These great political questions, are not to be decided by eternal reasonings—it is by recurring to facts

* *Ragionamento Sopra Toscana*, p. 39.

† *Ib.* p. 39, from Giovanni Villani, Francesco Balducci, Giovanni da Uzzano Benedetto Dei.

‡ *Cristofano Landino Apologia di Dante*.

§ *Ragionamento Sopra Toscano*, p. 61.

alone, that satisfaction can be gained. No wonder that the rich deep soils of Lombardy and Flanders have been well applied; but the more ungrateful and sterile hills of Tuscany remain (at least what I have seen of them) wild and unimproved.

There is yet a woollen manufacture of some consideration, and they make fine cloths of Vigonia wool; also hats; and various fabrics of silk.

The export of woollens from Tuscany in 1757, was 120,000 lb.; and in 1762, it was 180,000 lb.*

Among the silk manufactures, here are some good, and pretty satins, 18 *pauls* (the paul 5½d.) the *braccio*, (about two feet English), the width one *braccio* four inches.

The silk spun in Tuscany in ten years, from 1760 to 1769 inclusive, amounts to 1,676,745 lb.; or per annum, 167,674 lb.; and in the first sum is comprised 286,979 lb. of cocoons, bought of foreigners †. The silk manufacture amounts to a million of crowns, (7 liv. 10s. of Tuscany ‡). Of oil, the export is about 100,000 *barrils*. The year following the edict for the free commerce of oil and grain, the export amounted to 600,000 *scudi* §. Next to oil, hogs are the greatest export, to the amount of from 20 to 30,000 in a year.

The average of the quantity of silk made in Tuscany, and registered in the tribunal of Florence, from 1769 to 1778, was 165,168 lb.; and the import of foreign silk, 48,470 lb.; together, 213,649 lb. yearly ||.

MODENA.

In 1771, the following were the exports of the Modenese:

	<i>Liv.</i>
Brandy, 50,000 <i>poids</i> ,	593,280
Wine, 150,000 ditto,	428,222
Oxen, 5,232 head,	1,569,600
Cows, 3,068 ditto,	613,400
Calves, one year, 500 ditto,	69,150
Wethers and goats, 23,500 ditto,	141,048
Hogs, 11,580 ditto,	347,280
Pigs, 21,900 ditto,	329,145
Linen, hemp, sacks, &c. 1,800,000 <i>braccio</i> ,	1,442,327
Carry forward,	5,533,452

* *Ragionamento Sopra Toscana*, p. 183.

† *Pensieri Ap. Apol.* p. 56.

‡ *Ib.* p. 57.

§ *Ib.* p. 59.

|| *Ragionamento Sopra Toscana*, p. 161.

	<i>Liv.</i>
Brought forward,	5,533,452
Hogs salted, 1,900 poids,	24,479
Poultry,	24,342
Hats of straw and chip,	145,308
Ditto of woollen,	23,205
Gross fabricks of wool,	83,362
Butter,	106,240
Hemp, spun or prepared, 13,900 poids,	348,000
Wax,	74,400
Silk, 77,650 lb.	3,897,312
Honey,	15,350
Cheese,	98,556
Chestnuts,	17,440
Fruit,	81,320
	<u>10,472,766</u>

All these are by the registers of the farms; the contraband is to be added. —
Exportation is now greater than in 1771.

PARMA.

The first trade and export of the country is silk; the next cattle and hogs.

There is but one conclusion to be drawn from this detail of the commerce of Lombardy, namely, that eighteen-twentieths of it consist in the export of the produce of agriculture, and therefore ought rather to be esteemed a branch of that art, than of commerce, according to modern ideas; and it is equally worthy of notice, that thus subsisting by agriculture, and importing manufactures, these countries must be ranked among the most flourishing in the world; abounding with large and magnificent towns; decorated in a manner that sets all comparison at defiance: the country every where cut by canals of navigation or irrigation; many of the roads splendid; an immense population; and such public revenues, that if Italy were united under one head, she would be classed among the first powers in Europe.

When it is considered, that all this has been effected generally under governments not the best in Europe; when we farther reflect, that England has for a century enjoyed the best government that exists, we shall be forced to confess, perhaps with astonishment, that Great Britain has not made considerable advances in agriculture, and in the cultivation of her territory. The wastes of the three kingdoms are enormous, and far exceeding, in proportional extent, all that are to be found

found in Italy; while, of our cultivated districts, there are but a few provinces remarkable for their improvements. Whoever has viewed Italy with any degree of attention, must admit, that if a proportion of her territory, containing as many people as the three British kingdoms, had for a century enjoyed as free a government, giving attention to what has been a principal object, viz. agriculture, instead of trade and manufacture, they would at this time have made almost every acre of their country a fertile garden; and would have been in every respect a greater, richer, and more flourishing people than we can possibly pretend to be. What they have done under their present governments, justifies this assertion: we, blessed with liberty, have little to exhibit of superiority.

What a waste of time to have squandered a century of freedom, and lavished a thousand millions sterling of public money *, in questions of commerce! He who considers the rich inheritance of a hundred years of liberty, and the magnitude of those national improvements, which such immense sums would have effected, will be inclined to do more than question the propriety of the political system, which has been adopted by the legislature of this kingdom, that in the bosom of freedom, and commanding such sums, has not, in the agriculture of any part of her dominions, any thing to present which marks such expence, or such exertion, as the irrigation of Piedmont and the Milanese.

SECT. V.—OF POPULATION.

MILANESE.

In all Austrian Lombardy there are 1,300,000 souls.

In 1748, the population was about 800,000; and in 1771, it was 1,130,000. The Milanese contains 3000 square miles †. In 1732, there were 800,000 *pertiche* uncultivated; in 1767, only 208,000. In a square mile, of sixty to a degree, there are, in the Milanese, 354 souls. There are in the Dutchy, 11,385,121 *pertiche*, at 4868 *pertiche* in a square mile; and there are in the State, exclusive of roads, lakes, rivers, &c. 2338 square miles ‡, and 377 persons per square mile, which is certainly very considerable; and, that my readers may have a clearer idea of this degree of population, I shall remark, that to equal it, England should contain 27,636,362 souls §.

* Sir John Sinclair's *History of the Public Revenue*, vol. ii. p. 98.

† *Delle Opere del S. Conte Carli*, 1784, tom. i. p. 132.

‡ *Ib.* p. 319.

§ At 73,306 square miles each of 640 acres.

VENETIAN STATE.—*Padouan.*

In the whole district of the Padouan, there were, in 1760, 240,336 souls: in 1781, they were 288,300: increase 47,914. There is probably no corner of Europe, barbarous Turkey alone excepted, in which the people do not increase considerably—we ought not therefore in England, to take too much credit for that rapid augmentation which we experience. It is found under the worst governments, as well as under the best, but not equally.

Venice.

The population of the whole territory, 2,500,000: of the city, between 143 and 149,000, the Zuedecca included.

In Friuli, in 1581, there were 196,541; and in the city of Udine, 14,579. In 1755, in Friuli, 342,158; and in Udine, 14,729*. The population of all the States of Venice, by another authority, is made 2,830,000; that is 600,000 in Bergamo, Brescia, &c.: in the rest of the Terra Firma, 1,860,000: in Dalmatia and Albania, 250,000: in the Greek islands, 120,000†. In the time of Gallo, who died in 1570, there were said to be in the Brescian, about 700,000 souls; in 1764, there were 310,388‡.

TUSCANY.

The progressive population of Florence is thus shewn, by Sig. Lastrì:

1470 §,	-	-	-	-	40,323
1622,	-	-	-	-	76,023
1660,	-	-	-	-	56,671
1738,	-	-	-	-	77,835
1767,	-	-	-	-	78,635

The total population of the Dukedom, is calculated at about 1,000,000**. Two centuries ago, the population of the fields in the mountains, and on the

* Gemelli, vol. ii. p. 16.

† Della Piu' utile Ripartizione de' Terreni, &c. San Martino, 4to, p. 13.

‡ Gallo Vinti Giornata, Brescia, 1773, p. 413.

§ Decima, tom i. p. 232.

|| Ricerche sull' Antica e Moderna Popolazione della Città di Firenze, 4to, 1775, p. 121. Sig. Paoletti is a sensible writer, and a good farmer, but he is of Dr. Price's school,—“L' antica popolazione della Toscana era certamente di gran lunga superiore a quella de' nostri tempi;”—from Boccaccio, he makes 100,000 to die in Florence, of the plague in 1348; yet, in little more than a century after, there was not half the number in the city; he admits, however, that this is *esagerato*. *Pensieri Sopra l' Agricoltura*, p. 18.

** Ivere Mezzi Paoletti, p. 58.

sea-coast, was little less than double what it is at present. And there is said to have been the same proportion in the cultivation and cattle*.

MODENA.

State of the Dutchy in 1781:

Ecclesiastics,	-	-	-	8,306
Infants, under fourteen years of age,	-	-	-	50,291
Girls, ditto,	-	-	-	49,516
Men,	-	-	-	115,464
Women,	-	-	-	124,822
Total				<u>348,399</u>

Marriages, 2,901; births, 12,930; deaths, 10,933. Multiplying the births therefore by 27, gives nearly the population; or the deaths by 41.—Of this total, the following are in the mountain districts:

Carrara,	-	-	-	8,865
Maffa,	-	-	-	11,070
Garfagnana,	-	-	-	22,242
Varano,	-	-	-	629
Castel Nuovo,	-	-	-	14,576
Frignano,	-	-	-	19,526
Montefiorino,	-	-	-	15,721
Montefe,	-	-	-	19,694
Total				<u>112,323</u>

The rest in the plain.

PIEDMONT.

Subjects in the King of Sardinia's territories, 3,000,000. In Savoy, 400,000. In Sardinia, 450,000. In Turin, in 1765, 78,807. In 1785, it was 89,185. In 1785, births 3394; deaths 3537.

* *Differtazione sulla la Moltiplicazione del Bestiame Toscano.* Andreucci, 8vo, 1773, p. 14.

OF THE POOR.

MILANESE.—*Milan.*

Charitable foundations, in the city only, amount to 3,000,000 liv. (87,500l. sterling). In the great hospital, there are commonly from twelve to fifteen hundred sick: the effect is found to be exceedingly mischievous, for there are many that will not work, depending on these establishments.

Mozzata.

The labourers here work in summer thirteen hours. Breakfast one hour; dinner two hours; merenda one hour; supper one hour; sleep six hours. They are not in a good situation. I was not contented to take the general description, but went early in a morning, with the Marquis Visconti and Sig. Amoretti, into several cabins, to see and converse with them. In this village they are all little farmers: I asked if there were a family in the parish without a cow, and was answered expressly there was not one, for all have land. The poorest we saw had two cows and 20 *pertiche*; for which space he paid five *moggio* of grain, one-third wheat, one-third rye, and one-third maiz. Another, for 140 *pertiche*, paid 35 *moggio*, in thirds also. The poor never drink any thing but water; and are well contented if they can manage always to have bread or polenta; on Sunday they make a soup, into which goes perhaps, but not always, a little lard; their children would not be reared, if it were not for the cow. They are miserably clad; have in general no shoes or stockings, even in this rainy season of the year, when their feet are never dry; the other parts of their dress very bad. Their furniture but ordinary, and looks much worse from the hideous darkness from smoke, that reigns throughout; yet every cabin has a chimney. They have tolerable kettles, and a little pewter; but the general aspect miserable. Fuel, in a country that has neither forests nor coal-pits, must be a matter of difficulty, though not in the mountains. They were heating their kettles, with the ears of maiz, with some heath and broom. In the cold weather, during winter, they always live in the stable with their cattle, for warmth, till midnight or bed-time. For day labour they are paid 10s. a day in winter, and 12s. in summer. For a house of two rooms, one over the other, the farmer of 20 *pertiche* pays 24 liv. a year; that is to say, he works so much out with his landlord, keeping the account, as in Ireland, with a tally, a split stick notched. They are not, upon the whole, in a situation that would allow any one to approve of the system of the poor being occupiers of land; and are apparently in much more uneasy circumstances,

cumstances, than the day labourers in the rich watered plain, where all the land is in the hands of the great dairy farmers. I drew the same conclusion from the state of the poor in France; these in the Milanese strongly confirm the doctrine; and unite in forming a perfect contrast, with the situation of the poor in England, without land, but with great comforts.

STATE OF VENICE.

The people appear, in the districts of Bergamo, Brescia, Verona, and Vicenza, to be in better circumstances than in the Padouan. And from thence to Venice, there are still greater appearances of poverty: many very poor cottages, with the smoke issuing from holes in the walls.

Villamagna.

The peasantry, a term which, in all countries where the landlord is paid by a share of the produce, and not a money rent, includes the farmers, who are consequently poor, live here better than in districts more distant from the capital; they eat flesh once a week; the common beverage is the second mash, or wort, of the wine; eat wheaten-bread; and are cloathed pretty well.

SECT. VI.—OF PROHIBITIONS.

PIEDMONT.

The exportation of the cocoons of silk is prohibited; and the effect highly merits the attention of the politician, who would be well informed, from practice, of the principles of political œconomy. It is a perishable commodity, and therefore it is not at all likely, that if the trade were free, the quantity sent out would be any thing considerable; yet, such is the pernicious effect of every species of monopoly, upon the sale of the earth's products, that this prohibition sinks the price 30 per cent. While the cocoons sell in Piedmont at 24 liv. the *rubbio*, they are smuggled to the Genoese at 30 liv.; which export takes place in consequence of the monopoly having sunk the price. The object of the law is to preserve to the silk-mills, the profit of converting the silk to organzine; and for this object, so paltry on comparison with the mischief flowing from it, the land-owners are cheated in the price of their silk 30 per cent.: the State gains nothing; the country gains nothing; for not a single pound would be exported if the trade were free, as the motive for the export would then cease, by the price

price rising: the only possible effect is, that of taking 30 per cent. on all the silk produced out of the pockets of the grower, and putting it into those of the manufacturer. A real and unequivocal infamy; which reflects a scandal on the government, for its ignorance in mistaking the means of effecting its design; and for its injustice, in fleecing one class of men, for the profit of another. I demanded why the Piedmontese merchants could not give as good a price as the Genoese. "*They certainly could give as good a price, but as they know they have the monopoly, and the seller no resource in an export, they will have it at their own price; and if we do not give them this profit of 30 per cent. we cannot sell it at all.*" What an exact transcript of the wool laws in England!

Another prohibition here, not equally mischievous, but equally contrary to just principles, is that of keeping sheep in summer, any where in or near the plain of Piedmont; it is not easy to understand, whether the object of this law is, that the sheep at that season *shall* be kept in the mountains, or that they *shall not* be kept in the plain. In winter they are allowed every where. The shepherds buy the last growth of the meadows, at 5 liv. or 6 liv. per *giornata* for them; and pay for such hay, as may be wanted in frost or snow.

Corn from Sardinia is not allowed to be exported, but when the quantity is large, and then paying a heavy duty, yet this is the only commodity of the island; and the execrable policy that governs it, has rendered it one of the most wretched deserts that is to be found in Europe*. On account of this duty, they pay no land-tax†. No wonder that the authors of such a policy want to sell their inheritance!

MILANESE.

The export of cocoons are here also prohibited; and as it is rather more severely so than in Piedmont, the price is of course something lower. The duty on the export of silk, is 7½s. per pound.

Keeping sheep in the vale of the Milanese, every where prohibited by government, from the notion that their bite is venomous to rich meadows. The same in the Veronese; and there is a dissertation in the Verona Memoirs in favour of them.

STATE OF VENICE.—Brescia.

The cultivation of the mountains is every where prohibited in this republic, lest the turbid waters falling into the Lagunes, should fill up those channels, and unite Venice with the Terra Firma. Mr. Professor Symonds has remarked

* *Risorse della Sardegna*, tom. i. p. 3.

† *Ib.* p. 147.

the ill effects of cutting woods on the mountains, relative to the mischief which rivers in that case do to the plains; it is suspected in Italy, that there are other reasons also; and they have observed in the territory of Aqui, in Piedmont, that hail has done more mischief since the woods have been cut down, in certain districts of the mountains, between the Genoese territory and Montferat*.

Verona.

The export of wheat is prohibited when the price exceeds 24 liv. the sack, of 11 *pesi*, of 25 lb.; 11 *pesi* are 205 lb. English; and therefore 24 liv. equals 26s. 6d. per quarter English, of 456 lb.; apparently a regulation that is meant as an absolute prohibition. The export of maiz is also prohibited, when it reaches a certain price, proportioned to this of wheat. The export of cocoons and unspun silk prohibited.

Vicenza and Padoua.

The export of cocoons prohibited.

Venice.

The export of wool, from the Venetian territory, has been always prohibited. The export of wheat is prohibited, when the price arrives at 22 liv. the *saccho*; but so much depends on the magistrate, that there is no certainty, and consequently the trade crippled. The *stajo*, or *staro Veneziano* of wheat, is 133 lb. *grosso*; 4 *stari* 1 *mozzo*. The sack of flour is 204 lb. to 210 lb.† The sack of wheat 132 lb. *grosso*‡. As the Venetian pound is about one-twentieth heavier than the English, 22 liv. the sack about equals, not exactly, 36s. the English quarter, but the ratio of the price is of little consequence, in laws, the execution of which depends on the will of the magistrate||. Another prohibition, which marks the short and fallacious views of this government, on every object but that of their own power, is in the duration of leases; no person is allowed to give a longer one than for three years; which is in fact, to declare by law, that no renter shall cultivate his farm well.

ECCLESIASTICAL STATE.—*Bologna.*

The government of this country, in respect to taxes, is the mildest herhaps in Europe; but it loses much of its merit by many prohibitions and restrictions,

* *Memorie della Soc. Agraria*, vol. iv. p. 3.

† *Trattato della Pratica di Geometria Perini*, 4to, Verona, 1751.

‡ *De la Lande's Voyage en Italie*, tom. vii. p. 81.

|| On this point, see Mr. Professor Symonds's excellent paper in the *Annals of Agriculture*.

which have taken place more or less throughout Italy. Silk cannot be sold in the country; it must all be brought to the city. All wood, within eight miles of the same place, is a similar monopoly; it can be carried no where else. The export of corn is always prohibited; and the regulation strictly adhered to; and, it may be remarked, that the price is never low; the natural, and probably the universal effect of such a policy, must be a high price, instead of that low one, which is the object of the State.

TUSCANY.

In the States I have hitherto mentioned, to name prohibitions, is to exemplify their mischief in the conduct of all the governments, through whose territories I have yet passed; but in Tuscany the task is more agreeable—to give an account of prohibitions there, is to shew the benefit of their reversal, and of that system of freedom, which the late beneficent sovereign introduced.

In 1775, an unlimited freedom in the export and import of corn was established. The effect of this freedom, in the commerce of corn, has been very great; in the first place, the price of corn has risen considerably; and has never for a moment been low; the rise has been steady; famines and any great scarcity have been absolutely avoided, but the augmentation of price on an average has been great. I was assured, on very respectable authority, that landlords, upon a medium of the territory, have doubled their incomes, which is a prodigious increase. This vast effect has not flowed immediately from the rise in the price of corn, but partly from an increased cultivation, in consequence of that price, and which would never have taken place without it. On the other hand, the consumers feel a very great rise in the price of every article of their consumption; and many of them have complained of this as a most mischievous effect. I was assured, that these prices have been doubled. Such complaints can be just only with respect to idle consumers, at fixed incomes; a pension or an annuity is undoubtedly not so valuable now, as it was before the free corn trade; this is clear; but it is equally certain, that landlords, and all the mercantile and industrious classes, profit greatly by the general rise: this fact is admitted, nor would the improvement of all the arts of industry; the situation of the poor most highly ameliorated; and the increase of population, allow it to be questioned. Before the free trade, the average price was 5½ *pauls* (each 5½ *d.*) per *stajo*, of 54 lb.; now the average is 9 *pauls*. Here is a rise in the price of 40 per cent. Those whose interests, or whose theories point that way, will contend that this must be a most pernicious evil, and that the consumers of corn must suffer greatly; it however happens, and well it deserves to be noted, that every branch of industry, commercial and manufacturing, has flourished
more

more decidedly since that period, than in any preceding one, since the extinction of the Medici. This is one of the greatest political experiments that has been made in Europe; it is an answer to a thousand theories; and ought to meet with the most studious attention, from every legislator that would be thought enlightened.

No body can express himself better against the regulations in the corn trade, than Paoletti:—"Uno dei più gravi e dei più solenni attentati, che in questo genere si sia fatto, è che ancora, da una gran parte dei politici governi si fa all'ordine naturale è certamente quello, delle restrizioni e dei divieti nel commercio de'grani. Non han conosciuto mostro il più orribile, il più funeste quelle sfortunate nazioni che ne sono state infestate. Le pesti, le guerre, le stragi, le proscrizioni dovunque aprirono il teatro alle loro tragedie non arrecarono mai tanti danni al genere umano, quanto questa arbitraria politica *."

It is remarked, by a very intelligent writer, that the early declension of Tuscan agriculture, was caused by the ill-digested and injurious laws of restriction and prohibition, in the beginning of the sixteenth century: the price of provisions was regulated, in order to feed manufacturers cheaply, not perceiving that the earth gave scanty fruits to poor cultivators; that exalting the arts by the depression of agriculture, is preferring the shadow to the body. Wool was wanted for the fabrics, yet no encouragement given to breeding sheep. Merchants and manufacturers composing the legislative body, whose interests were concentrated in Florence; all the other towns, and generally the country, were sacrificed at the shrine of the capital: they made a monopoly of the Levant trade, and even of ship-building; which had such pernicious consequences, that in 1480, they were obliged to lay open the remnants of trades once flourishing †. They shewed the greatest eagerness to encourage the planting of mulberry-trees; yet knew so little of the means of doing it, that they subjected the sale of cocoons to a multitude of restrictive regulations, and even fixed the price, and gave a monopoly of the purchase ‡; and even the power of fixing the price of silk was, by the government, given to four dealers; and in 1698, the whole trade was subjected to the price of one man; and such was the effect of these fine measures, that a law was passed forcing plantations of mulberries; four trees to every pair of oxen employed §. So utterly subversive of the intention will the prohibitory system always prove!

By the edicts of 1775, 1779, and 1780, of the Grand Duke, a multitude of restrictions, on the sale of cocoons and wool, and on the fabric of both silks

* *Iveri Mezzi, &c. Ap. Apol.* 1772, 8vo, p. 19.

† *Ragionamento Sopra Toscana*, p. 68.

‡ Cosmo I. first allowed the export of cocoons, February 22, 1545; subject to a duty of 18s. the pound, of one sort, and 3s. the other; augmented successively, and at last fixed to 2 liv.

§ *Ragionamento*, p. 83.

and woollens, were abolished. A free trade in corn, oil, cattle, and wool, was given * about the same time; as well as the rights of commonage destroyed †. By the edict of March 18, 1789, the plantation and manufacture of tobacco was made free; and, that the farmers of the revenue might not be injured, the benevolent sovereign declares he will buy all cultivated on the usual terms, till the expiration of the farmer's lease ‡.

I am very sorry to add to the recital of such an enlightened system, a conduct in other respects borrowed entirely from the *old school*: the export of cocoons has been long prohibited; and even that of spun silk is not allowed. But what is much worse than this, the export of wool, about six months ago, was forbidden, under the shallow pretence of encouraging manufactures. Such a monopoly, against the agriculture and improvement of the country, is directly contrary to the general spirit of the Grand Duke's laws. The same arguments which plead in its favour, would prove equally in favour of prohibitions, and shackles on the corn trade; he has broken many monopolies: Why give a new one? The most plausible plea for this, is the example of England; but does he know that of all the fabrics of that kingdom, this of wool is the least flourishing; and precisely by reason of the manufacturers having the monopoly of the raw material, and thereby being enabled to sink the price 60, and even to 70 per cent. below the common rates of Europe? The total failure of this policy in England, which cheats the land of four millions a year, in order not to increase, but to hurt the fabric, should plead powerfully against so pernicious an example. They should know, that the raw materials of our most flourishing fabrics, are exportable; some free, and others under low duties; and that wool is an exception to all the rest; and at the same time, the manufacture that has made the least progress ||.

MODENA.

The export of wool is prohibited; wherever this is the case, it is not to be expected that any exertions can be made in improving the quality; and accordingly we find that all the Modenese is miserably bad. The measure is intended as a gratification to the manufacture; and when that possesses the mo-

* *Leggi dei*, Sep. 14, 1774; Dec. 28. Also, Aug. 24, and Dec. 11, 1775.

† March 7, and Apr. 11, 1778.

‡ *Della Coltivazione del Tobacco*. Lastri. Firenze, 8vo, 1789, p. 40.

|| See this point particularly explained in *Annals of Agriculture*, vol. x. p. 235, and in many other papers of that work. Some of these memoirs were translated and published in French, under the title of *Filature, commerce et prix des Laines en Angleterre*, 8vo, 1790; but some of the best papers, for instance, that above alluded to, and others, were left out of the collection.

nopoly, the wool is sure to be worthless; which is the case here. They make in the mountains, some coarse things for the wear of the common people.

PARMA.

There is a fabric of earthen-ware at the city of Parma, to encourage which, the import of all foreign ware is prohibited; the effect is, that the manufacture is contemptible, without an effort of improvement; it has the monopoly of the home consumption, which yields a great profit, and further nobody looks. It was justly observed to me, that with such a favour no flourishing manufacture could ever arise at Parma, as the advantage of the monopoly was greater. The policy of prohibitions has every where the same result.

SECT. VII.—OF THE PRICES OF PROVISIONS, 1789.

Nice.

Bread, 3*s*. (the Piedmontese *sol* is the twentieth part of a livre, or a shilling, and the pound is about one-tenth heavier than the English). Beef, 3*s*. 8 *den*. Mutton, 4*s*. Veal, 5*s*. Butter, 12*s*. Cheese, 11*s*. Bread, last winter, 1 *piccolin* (one-sixth of a *sol*) cheaper. At these prices of meat, weighing-meat added.

Coni.

Bread, 2*s*. 3 *den*.; for the poor, 1½*s*. Beef, 3*s*. 2 *den*.

Turin.

Bread, 3*s*. Veal, 5*s*. Butter, 9*s*. Cheese, 9*s*. Brown bread, 2½*s*.; for the poor, 1*s*. 8 *den*. Nobody but the poor eats beef or mutton.

Milan.

Beef, 13*s*. Cow ditto, 10*s*. (the *sol* the twentieth of the livre, which is 7½*d*.; the pound *grosso* is to that of England, by Paucton, as 1.559 is to 0.9264). Mutton, 10½*s*. Veal, 15*s*. Pork, 18*s*. Butter, 35*s*. Cheese, Lodizan, 42*s*.

Codogno.

Bread, 4 oz. 1*s*. Beef, 12*s*. per lb. Veal, 12*s*. Butter, 22*s*.

Verona.

Bread, 5 *s*. per lb. of 12 oz. (equal to ¼ lb. English). 20 Venetian *sol*s equal to 6*d*. English.

Vicenza.

Vicenza.

Beef, 14*s.* per lb. of 12 oz. *grosso*; this ounce is to the English, as 690 is to 480. Mutton, 13*s.* Veal, 16*s.* Pork, 17*s.* Butter, 30*s.* Cheese, 32*s.*; ditto of Lodi, 44*s.* Hams, 44*s.* Bread, by the ounce *sofite* (which is to the *grosso*, as 1 is to 1½), 6*s.*

Padua.

Beef, 14*s.* per lb. of 12 oz. *grosso* (which is to the English pound, as 9966 is to 9264. *Paucton*). Mutton, 12*s.* Veal, 16*s.* Pork, 16*s.* Butter, 32*s.* Cheese, 24*s.*

Venice.

Beef, 15*s.* per lb. *grosso* (to that of English, as 9758 is to 9264. *Paucton*). Mutton, 13*s.* Veal and pork, 18*s.*

Ferrara.

Beef, 3½ *baiocchi* (10 to a *paul* of 6d.) per lb. of 12 oz. Mutton, 3 *baioc.* Veal, 4 *baioc.* Butter, 9 *baioc.* Cheese, 8 *baioc.*

Bologna.

Bread, 2 *baiocchi* per lb. (to the pound English, as 7360 is to 9264. *Paucton*). Beef, 4 *baioc.* 2 *quatrini*. Mutton, 3 *baioc.* 4 *quat.* Veal, 5 *baioc.* 2 *quat.* Pork, 6 *baioc.* Butter, 10 *baioc.*; and in winter, from 15 *baioc.* to 20 *baioc.*

Florence.

The livre (of 8½d.) is 12 *grazie*, or 20 *soldi*, the *sol* is 3 *quatrini*; and the pound is three-quarters English. Bread, 8 *quatrini* per lb. Meat in general, 7½*s.* Butter, 1½ *paul* (the *paul* 5½d. English). Cheese, 10*s.*

MODENA.

Bread, the best white, ¼ *paul* per lb. (the *paul* is 6d. English; and the pound is to ours, as 6513 is to 9264, or something under twelve of our ounces). For the poor it is cheaper. Bread is thus dear, owing to the *entrées* and *gabelle*; a sack of flour, of 70 liv. sells at 100 liv. Beef, 12 *bolognini* per lb. Mutton, ⅓ of a *paul*, or 10 *bol.* Veal, 13 *bol.* Pork, 14 *bol.* Butter, 1 *paul*. Cheese, 40 *bol.*

Lanesbourg.

Bread, 4*s.* for 18 oz. Meat of all sorts, from 3*s.* to 3½*s.* for 12 oz. Cheese, from 4*s.* to 5½*s.* Butter, 6*s.* for 12 oz.

CORN, 1789.

PIEDMONT.—*Coni.*

Rye, the *eymena* of 2 *rubbio*, or 50 lb. 3 liv.

Chentale.

Wheat, the *eymena* of 45 lb. or 52 lb. aver. 47, 3 liv. 15s. In common, 3 liv. 15s. Maiz, 2 liv.

Turin.

Maiz, 2 liv. Wheat, 3 liv. 10s. the *eymena* of 50 lb. Rye, 2 liv. 10s.

Milan.

Wheat, 34 liv. the *moggio* of 140 lb. 28 oz. Oats, 15 liv. Maiz, 20 liv. Miglio, 18 liv. Rice, 44 liv.

Codogno.

Rice, 5 liv. the *stara*. Willow wood, 14 liv. 6 *braccio* long and 3 *braccio* broad. Flax, 5½s. for 5 oz. ready for combing; 50s. per lb.

Verona.

Wheat, the export prohibited when it exceeds 24 liv. the sack, (26s. 6d. English quarter). Maiz, now 24 liv. the sack, of 11 *pesti*, of 25 lb.; common price, from 20 liv. to 22 liv.; has been so low as 6 liv.

Venice.

Wheat flour, 8½s. per lb. Bergamasque maiz, 24s. the *quarterole*, of 6 lb. Common maiz, 22s.

Bologna.

Wheat, the *corba*, 24 *pauls*. Maiz, 18 *pauls*. Oats, 12 *pauls*. Barley, 16 *pauls*. Beans, 18 *pauls*.

Florence.

Wheat, 9 *pauls* the *stajo*, which may in a rough way be called 1d. per lb.: this is 4s. 9d. per English bushel, of 57 lb.; and 5s. per bushel, of good wheat. Before the free corn trade, it was on an average, at 5½ *pauls*. Beans, now 5½ *pauls* to 7 *pauls*. Saggina (great millet), 4 *pauls* the *stajo*. Maiz, from 4 *pauls* to 5 *pauls*. Barley, 5 *pauls*. Oats, 4 *pauls*. French beans, 7 *pauls*.

WINE,

WINE, FUEL, HAY, STRAW, &c.

Nice.

Wine, 7*s.* the bottle. Charcoal, 24*s.* per 100 lb. Wood, 15*s.* per 100 lb.

Cbentale.

Hay, from 5*s.* to 8*s.* the *rubbio*, of 25 lb.

Turin.

Hay, 10*s.* the *rubbio*. Straw, the same. Wine of Brenta, 7 liv. 10*s.* the 36 pints, each 4 lb.; for the poor, 4 liv. Wood, 12 liv. the load, of 200 pieces, 3 feet long. Charcoal, 12½*s.* the *rubbio*. Candles, from 9*s.* to 10*s.* Soap, 7*s.* Lime, 5½*s.* the *rubbio*. Bricks, 22 liv. per thousand.

Milan.

Iron, the pound of 12 oz. 5*s.* Charcoal, 100 lb. of 28 oz. 3 liv. Bricks, 30 liv. per thousand.

Mozzata.

Wine, common price, 10 liv. or 12 liv. the *brenta*, now 6 liv.

Milan.

Hemp, ready for spinning, 1 liv. per lb. of 28 oz. Flax, ditto, 32½*s.* Oil, linseed, per lb. of 28 oz. 26*s.* Walnuts, 1 liv.

Verona.

Wood, 5*s.* the *peso*, of 25 lb. (18 lb. English).

Vicenza.

Candles, 20½*s.* Soap, 20*s.* Dutch herrings, 3*s.* each. Iron, 11*s.* *grosso*. Charcoal, from 5 liv. to 8 liv. the 100 lb. Coals, from Venice, 4½ liv. the 100 lb. Wood, the *carro*, of 108 cubical feet, 22 liv.; of oppio, walnut, &c. the pieces the size of a man's arm. Sugar, from 25*s.* to 35*s.* *sofite*. Coffee, 3 liv. 6*s.* Chocolate, 3½ liv. or 4 liv.; with vanilla, 6 liv. or 7 liv. By the ounce *grosso*, which is to the ounce English, as 690 is to 480, is weighed flesh, butter, cheese, candle, soap, &c. By the ounce *sofite*, is weighed sugar, coffee, drugs, rice, bread, filk, &c.; it is as 1 is to 1½.

Ferara.

Wine, 1 *baiocca* the *bocali*.

Bologna.

Bologna.

Wood, the load, 30 *pauls*. Faggots, 24 *liv.* per 200. No coal. Charcoal, 1½ *paul* the *corba*. Bottle of common wine, from 3 *baioc.* to 5 *baioc.*: common price of wine, from 20 *pauls* to 30 *pauls* the *corba*, of 60 *bocali*. Sugar, 2 *pauls* 1 *baioc.* the lb. Coffee, 2 *pauls* 2 *baioc.* Of Moka, 3 *pauls* 5 *baioc.* Candles, 8 *baioc.* Wax ditto, 8 *pauls*. A footman, with a livery, 50 *pauls* a month. A man cook, from 20 to 40 *zecchins*. An English gentleman's table is served, nine in the parlour, and five in the kitchen, by contract, for 20 *pauls* a day.

Florence.

To plough a *stiora* of land, 3 *liv.* Hay, 4 *pauls* the 100 lb. (about 2l. 15s. a ton). Straw, 3 *pauls* per 100 lb. Wine, 8 *grazie* the bottle. Charcoal, 100 lb. 4 *pauls*. Wood, the *cataster* of 6 *braccia* long, 1½ broad, and 2 high, 28 *liv.* Rent of a poor man's house, 18 *pauls*.

MODENA.

Wood, 45 *liv.* the load, of 3 *braccia* long, 3 high, and 3 broad. Wine, 40 *liv.* the 12 *pesi*. Candles, 20 *bol.* Soap, 15 *bol.*

PARMA.

Hay, 80 *pesi*, 150 *liv.* (the *pesi* 25 lb. each ¼ lb. English; and the *livre* 2½ d. about 1l. 9s. per ton).

LABOUR.

Nice.

Summer, 30s. (1s. 6d.) Carpenter and mason, 40s. (2s.)

Coni.

Summer, 14s. Winter, 10s. (6d.) Mason, 25s.

Savigliano.

Summer 12s. Winter, 10s. Farm servants wages, about 100 *liv.* (5l.) a year, beside their food, which consists of 3 lb. or 4 lb. of bread, according to the season, a soup *maigre*, a *polenta* (a maiz pudding), &c. &c. During the summer, they add cheese, and a little small wine, with a salad; and in harvest time, a soup of good wine, which they call *merendon*, but they then work twelve hours a day.

Turin.

Summer, 11*f.* Mason, 25*f.* Carpenter, 27*f.*

Milan to Pavia.

Summer, 22½*f.* (8*d.*) Winter, 10*f.* (3½*d.*) Manufacturers, 40*f.* Labourers pay 7 liv. (at 7*d.* English) for a cottage, and a very little garden.

Mozzata.

Summer, 12*f.* Winter, 10*f.*

Lodi.

Summer, 20*f.* Winter, 12*f.* Harvest, 30*f.* Mowing, 20*f.* a day; a good hand mows 5 *pertiche* a day.

Codogno.

Weavers, 20*f.*

Verona.

Summer, 30*f.* (9*d.*) Winter, 20*f.* (6*d.*)

Vicenza.

Summer, 16*f.* Winter, 14*f.* Mowing, 30*f.*

Padoua.

Summer, 25*f.* and wine. Mowing, 2 liv. (1*s.*) a day: wheat, 3 liv. ditto. Winter, 16*f.*

Venice.

Summer, from 30*f.* to 40*f.* Mason, 4 liv.: the lowest in the arsenal, 3 liv. a day.

Ferrara.

Summer, 25 *baiocchi* (1*s.* 3*d.*) Winter, 12 *baioc.*

Bologna.

Summer, 12 *baioc.* and 2 *bocali* of wine, each 3 lb. 4 oz. Winter, 10 *baioc.* (6*d.*) In harvest, to 20 *baioc.* Half a day, of 4 oxen and 2 men, 5 *paoli* (2*s.* 6*d.*) Manufacturers earn from 5 to 20 *baioc.* a day. The women that spin hemp, 3 or 4 *baioc.*

Florence.

In the silk mills of Florence, they are now (November) working by hand, for want of water. The men earn 3 *pauls* (1*s.* 4½*d.*) A girl of fifteen, 1 *paul* (5½*d.*) In the porcelaine fabrics of the Marchese Ginori, common labour,

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LOMBARDY.

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2 or 3 *pauls*. Painters, 4½ *pauls*. In summer, 1½ *paul* and food. In winter, 1 *paul* and ditto. To plough a *stiora* of land, 3 liv. Threshing corn by the day, 1 liv. and food. Cutting corn, 18 *grazie* and food.

MODENA.

Common labour, 1 *paul* and wine. Carpenter and mason, 2 *pauls*.

PARMA.

Printer's men, 3 *pauls* a day, (16½d.)

Lanesbourg.

Winter, 10*s*. and food. Summer, 20*s*. and food.

POULTRY.

Nice.

Turkey, 7 liv. Fowl, 20*s*. Pigeon, 20*s*. Eggs, 12*s*. the dozen.

Turin.

Turkey, 30*s*. Fowl, 15*s*. Duck, 25*s*. Goose, 25*s*. Pigeon, 10*s*. Eggs, the dozen, 8*s*.

Milan.

Turkey, 11*s*. per lb. Fowl, 20*s*. Duck, 32*s*. Eggs, the dozen, 26*s*. Capon, 15*s*. per lb.

Bologna.

Turkey, of about 4 lb. 3½ *pauls*. Pair of capons, 30 *baiocchi*. Eggs, 1 *baioc*. each; in winter, 1½ *baioc*. Tame large pigeons, 24 *baioc*. the pair. Wild small pigeons, 12 *baioc*. Eels, from 12 to 14 *baioc*. per lb. Tench, 10 *baioc*. per lb. Pike, from 12 to 15 *baioc*. Sturgeon, 5 or 6 *pauls* per lb.

MODENA.

Capon, 1 *paul*. Fowl, 40 *bol*. Turkey, 4 liv. Duck, 4 liv. Twenty eggs, 25 *bol*. Pigeons, 1 *paul* the pair.

RISE OF PRICES.

Milan.

In 794, a decree of the Senate and Diet of Frankfort, canon 4, that corn should sell at the following prices, no regard to scarcity and abundance:—*Moggio* of oats, 1 *denaro*; one of barley, 2 *denari*; one of rye, 3 *denari*; one of wheat, 4 *denari*: proportion 1080 to 1.

In 835, hogs, 20 *denari*.

In 857, one pound of silver, *lira*, 20 *soldi* of 12 *denari*; one *denaro*, now at Milan, on comparison of an antient *denaro*, of half a *paolo*, was as 1 to 90; for 90 *denari* make half a *paolo*. The value of silver now, to that of antient times, as 1 to 12; therefore it is 1 to 1080*.

In 975, *un stajo di vino*, 1 *denajo*; *un moggio di frumento*, 4 *denaji*; *un carro di legna*, 1 *denajo*, equal to 18 liv. at 1 to 1080†.

In 1152, rye and panic, 3 liv. the *moggio*; 1 *denaro* equal to 130; consequently 3 liv. is equal to 13 liv. 10s. 10 den.‡

In 1165, 500 hogs, each 6 *soldi*; which now we must call 65 liv. each||. Cart load of wood, drawn by a pair of oxen, 12 *denari*; equal now to 6½ liv.

In 1272, 1 *moggio* of wheat, the common price, 19 *soldi*. Millet, 12 *soldi*; and this, to the money of the present time, is as a livre for a *sol*; that is, wheat, 19 liv. and millet, 12 liv.§

In 1315, 1 *soldo* for a mass, equal to 20 now; 1 *fiorino d'oro*, 30s. now 60 liv. as 1 to 40: the *fiorino d'oro* antient, and the present *zecchino*, the same thing. From this time to the present, the proportion of the money of those times to the present, is as 1 to 4**.

In 1402, the *fiorino o ducato d'oro*, worth 42 *soldi*, equal to 16 liv. 8s. at present††.

Bologna.

The prices of every thing are now, at Bologna, from 10 to 15 per cent. dearer than ten years ago; here attributed to the increased plenty of money, from a rise of the price of the products of the country, hemp and silk selling much higher. Twenty years ago, hemp was at 30 *pauls*, now at 50. And in Tuscany, the prices of every thing doubled since the free corn trade.

* *Giulini, Storia di Milano*, vol. i. p. 268. † *Ib.* vol. ii. p. 380. ‡ *Ib.* vol. v. p. 527.

|| *Ib.* vol. vi. p. 332. § *Ib.* vol. viii. p. 254. ** *Ib.* vol. x. p. 87. †† *Ib.* vol. xii. p. 63.

It is worthy of the reader's observation, that the general prices of provisions, and of *living*, as it may properly be called, have risen, perhaps, as much in Italy, as in any country of Europe; certainly more than in England, as I could shew by many details, if they were consistent with the brevity of a traveller. A fact of so much importance, would admit of many reflections; but I shall observe only, that this sign of national prosperity, (and I believe it to be one), is not at all confined to the countries in the possession of extensive manufactures, and a great trade, since we find it in those that have none.

I shall not enlarge upon it, but barely hint, that the possessor of a landed estate in Lombardy, has raised his rents, to the full, as much in the last ten, twenty, thirty, or forty years, as his brother landlord has in England, who has blessed himself with the notion, that manufactures and commerce have done more for him, than for any other similar class in Europe. It is very common in the English parliament, to hear the deputies of our tradesmen expatiate on what the immense manufactures and commerce of England have done for the landed interest. One fact is worth an hundred assertions: go to the countries that possess neither fabrics nor commerce, and you will find as GREAT a rise perhaps in the same period.

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CULTIVATION, &c.

THE vale of Aran* is richly cultivated, and without any fallows. Follow the Garonne, which is already a fine river, but very rapid: on it they float many trees to their saw-mills, to cut into boards; we saw several at work. The vale is narrow, but the hills to the left are cultivated high up. No fallows. They have little wheat, but a great deal of rye; and much better barley than in the French mountains. Instead of fallows, they have maiz and millet; and many more potatoes than in the French mountains. Haricots (French beans) also, and a little hemp. Saw two fields of vetches and square pease. The small potatoes they give to their pigs, which do very well on them; and the leaves to their cows; but assert, that they refuse the roots. Buck-wheat also takes the place of fallow, many crops of it were good, and some as fine as possible.

The whole valley of Aran is highly peopled; it is eight hours long, or about forty miles English, and has in it thirty-two villages. Every one cultivates his own land. A journal of meadow sells in the valley for 800 liv. irrigated, but by no means so well as in the French mountains, nearly an arpent of Paris, which is something more than an English acre. The lower arable lands are sold for 500 liv. or 600 liv.; the sides of the hills proportionably; and the higher lands not more than 100 liv. Their crops of all sorts, vary from 2½ to 3 quarters English the acre. Hay harvest no where begun.

* The route in which these observations were made, is marked in the journal inserted in the first volume; also the dates.

The mountains belong, as in the French Pyrenees, to the parishes; each inhabitant has a right to cut what wood he pleases for fuel and repairs, in the woods assigned for that purpose; others are let by lease at public auction, for the benefit of the parish, the trees to be cut, being marked; and, in general, the police of their woods is better than on the French side; when woods are cut, they are preserved for the next growth.

Have scarce any oxen; what few they kill, they salt for winter. Taxes are light; the whole which a considerable town is assessed at being only 2700 liv. which they pay by the rent of their woods and pastures let: but if calculated by tailles, houses, &c. and including every thing, the amount would be about 3 liv. a year, on a journal of 600 liv. value. This is the proportion of an acre of land worth 30l. paying 3s. a year, in lieu of land and all other taxes.

Coming out of Veille, see to the right some of the most stoney land I have ever beheld, yet good hemp and buck-wheat were growing on it. In the hedges, many of the plants common to them in England. The pastures on the mountains good, quite to the snow; but the low meadows not watered with the attention given them by the French in their Pyrenees. Pass several of the thirty-two villages of the valley of Aran; population very great, for they crowd on each other; and this results here from the division of property, and not from manufactures, which have more than once been supposed the only origin of great population.

Much millefolium here, and other plants common with us. Plough with bullocks; all we saw, pale reddish, or cream-coloured, and with horns.

No wood at the top, but pasturage and rocks of micaceous schistus; met a great herd of dry cows and oxen, cream-coloured. It is remarkable, that a pale reddish cream-colour holds from Calais quite across France hither, with very little variation.

Flocks of sheep, and a penn for oxen and cows—the latter milked for cheese. Plough with oxen in yokes and bows, as in England, and not yoked by the horns as in the south of France. Come to fallows (which is a point of worse husbandry than we have seen for some time), manuring by asses, loaded with baskets. The trees here (pines) are finer than on the French side; they are all cut for the Tolouse market, being carried over the mountains, and floated down the Garronne; from whence we may draw conclusions on the comparative demand of the two kingdoms. Land here sells from 400 liv. to 500 liv. the journal.

Come

Come to the valley d'Estredano, where wheat and rye are cut. Every scrap on the descent is cultivated; an extensive savage view of mountain, with patches of culture scattered about the declivities: but fallows are found here.

Pass Rudase, on the top of a rocky mountain, come presently to vines, figs, and fruit trees; snow in sight. As we descend to the vale, every spot is cultivated that is capable of being so.

Cross the river to Realp; about which place is much cultivation, as the mountains slope more gently than hitherto. Hedges of pomegranates in blossom. The town is long and has many shops. Hemp is the great object in it; of this, they make ropes, twine of all sorts, bags, and have some looms for converting it into cloth. Corn and hay all carried on panniers.

Pass Sort, a vale spoiled by the river, which exhibited the depredations of the Italian rivers, so excellently described by my learned friend, Mr. Prof. Symonds.

Hitherto, in Catalonia, we have seen nothing to confirm the character that has been given of it; scarcely any thing has a tolerable appearance. It is much to be questioned, from the intelligence, whether they have any such a thing as a farmer who rents land: only patches of property—no maize, and French beans very poor—fallow every where on the hills, and yet the rye after them miserable. Old vineyards, of late, quite neglected, over-run with weeds, yet the grapes of a size that shew what the climate is; they are now as big as pease. In the towns every thing as bad; all poor and miserable.

Rising up the mountain, which is all of pudding stone, we find it is all cut into terraces, supported by many walls, with rows of vines on them for raisins, not wine, mulberries, and olives: but here are fallows, and I thought I perceived traces of these hills having been formerly more cultivated than at present.

Pass Colagase. Come to a regular vineyard, the rows twelve feet asunder, the intervals alternate fallow and corn. The features of the country now begin to relax, the mountains are not so high, and the vales are wider. The leaves of a good mulberry-tree sell for 44s. or 22d. English.

Many walnut-trees full of fruit. Much is tithed by the church: see much corn threshing every where.

Cross two pieces that had rye last year, left now to weeds, and will be under rye again next year; an extraordinary course. Mulberry-leaves never sold, but if so, the price would be about 4½ liv. a tree. Cows all red. Land in the vale sells from 20l. to 25l. English, the journal. The road leads up Monte Schia,

the whole of which consists of a white stone, and argillaceous marl. Snow on the distant mountains.

Look back over a great prospect, but totally to the eye without wood. Cross a hill to another great vale, where is much, and some rich cultivation, as the hills are not steep, but sloping.

Pass in sight of St. Roma, near it the road leads by a small round lake, but it is on very high ground, no hills near it; it is said to be very deep. Here they were hoeing a barley stubble, just ploughed, to form ridges, on which they sow French beans. This district is called that of shells: millet just up; pass a large waste almost entirely covered with lavender; corn on a part of it; but after a crop, they leave it to weeds to recover again. Here also they practise the alternate husbandry of one bed, or broad-ridge, corn, and another fallow. Plough with cream-coloured oxen. In breaking up the wastes here, they cut the spontaneous growth to dry, then pile it into heaps with the earth pared and placed on it; this is all burned; we saw heaps ready to be burned to the quantity of five hundred loads an acre; but the crops are wretched for many miles, scarcely the seed again.

In our inquiries, meet with some traces of what, in France, are called *Metayers*, that is, a sort of farmers who cultivate the land for half the produce; the landlord taking one half, and the tenant the other.

For two hours and a half, pass a waste mountain covered with shrubs, and scattered with ever-green oaks, and lower down, the evident remains of old terraces, which have once been cultivated, but now over-run with weeds. To Fulca; the ploughs here have all long beams, as in the south of France, which reach to the yokes of the oxen, and consequently they have no traices; two small sticks form the mould-board; they plough all flat.

In this district, not one acre in an hundred cultivated, all rocks, shrubs, and weeds, with patches of wretched oats on the mountain sides. The road leads up one which is all of stone, covered with rosemary, box, brambles, &c. As the top break at once on the view of a deep vale, or rather glen, at the bottom of which, a muddy river has spoiled the little land which might have been cultivated. The hills are steep, and all is cultivated there that could be so, but the quantity very small.

Descend into a very rich vale, and to the town of Paous. There we saw many persons winding silk, the cocoons were in warm water, and wound off by a well-contrived reel, something different from those used in France.

Prices

*Prices.*Bread, 3*s.* per lb. of 12 oz.Mutton, 6*s.* per lb. of 48 oz.Pork, 15*s.* per lb. of 48 oz.Bottle of sweet white wine, 5*s.*Bottle of sweet red wine, 2*s.*

Here they were threshing, by driving mules around on a circular floor of earth, in the open air; a girl drove three mules round, and four men attended for turning, moving away the straw, and supplying the floor with corn. Their crops are all brought home by mules or asses with panniers; met several; they each carried six sheaves, equal to twenty common English ones; where roads are bad, this is the only way in which it can be done.

Pass a great waste of argillaceous marl, in which are strata of talc:—much of it a soft white rock; the strata in some places clear and transparent, shining, break in thin flakes; the country for many miles waste, so that there are not more, I guess, than one acre in two hundred cultivated.

More deserts for several miles. Some alternate fallow husbandry between vines, and the crops so contemptible, that they produce not more than the feed. Pass some vineyards surrounded on every side by deserts; no water, and yet the vines and grapes are of the most beautiful luxuriance; from which I conclude, that immense tracts of these waste lands, might be applied with equal profit, if there were men and capitals enough in the country.

Meet a farmer, who pointed out to us a piece of land, containing exactly a Catalonia journal, from which, it appeared to be pretty nearly the same measure as an English acre. They stack their corn by the threshing floor, drive mules, &c. around upon it, and draw the straw, when cleared, with ropes, by a mule to the stack, in which it is deposited for winter use.

To Beosca, mostly desert hills, but some broad vales, which are cultivated; about that place, many mulberries, vines, and corn, but all the last gained by fallow. A farmer here, pays a seigneur, who lives at Barcelona, 2000 liv. a year for his farm, which is reckoned a large one. Through all this country, they collect from every waste spot, amongst their cultivated lands, shrubby wood and weeds, with which they burn heaps of clods and earth, and spread the ashes on the fallow as a manure for corn.

There seems every where to be inclosures sufficient for ascertaining distinct properties, but not for security against any sort of cattle. No where any wood
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to be seen, except fruit trees, olives, or ever-green oaks, which are almost as sad as the olive; altogether, nothing for beauty of landscape. The hills all rocks, and the vales vines, scattered with those trees. Some new plantations of vines. Towards Toorà, the country is much more cultivated; the sides of the hills covered with olives. The vale has many mulberries, and much tillage; and for some miles past, there are many scattered houses, which has not been any where the case before: remarked one great improvement, which was a vineyard, with vetches sown in the alternate husbandry between the rows, instead of a fallow, to be followed by corn.

Leave Calaff.—Crop and a fallow; some vetches; much cultivation; and better corn than we have in general met with; some sown in squares, as if in clusters, but could not learn the fact. In some parts, many vetches instead of fallow; they are planted by hand, and wheat sown after. The soil, a good adhesive loam, brown with a reddish hue, better than the white land, which travelled with us so long yesterday: most of the corn cut.

Great waste, and mount a hill, from whence an extensive view; all the country alike, no wood; and not one acre in ten cultivated. Pass four or five cream-coloured bullocks, and one or two blood-coloured. I note them, having seen so few in so many miles.

French beans, eighteen inches by twelve; a good deal of cultivation; but vast wastes, and country of a rocky, savage aspect; many pines, but poor ones. Within four hours of Montserrat, vines at six feet asunder, the first we have seen planted in that manner, which shews the proprietor content with having one product only on the ground.

Wastes continue; not one acre in a hundred cultivated. All broken country, and scarcely any vales of breadth.

At the bottom we came again to olives. Meet two very fine cream-coloured oxen, which the owner says would sell for about eighteen guineas; feeds them with straw, but gives oats or barley when they are worked; they are in such good order, that the straw must either be much more nourishing than ours, or their work very light indeed. From the marks in the pine-trees, conjecture that they draw resin from them.

Pass Orevoteau, where is a hedge of aloes about four feet high. A gradual descent, for some time, on a wretched stoney desert, of nothing but aromatic plants, thin, and scattered with the dismal ever-green oaks, more dull and disagreeable, if possible, than the olives.

Near

Near Esparagara, vines at five or six feet, which cover the ground; red loam, mixed with stones. This town is the first manufacturing one we have met with, or which seemed to be animated with any other industry than that of cultivation. The fabric is woollen cloths and stuffs. Spinners earn 6*s.* a day, and food. Carders, 11*s.* They have also many lace-makers, who earn 9*s.* a day. These are Spanish money; their *sol* is something higher than the French, which is our half-penny.

Fallow every where, yet many of the stubbles full of weeds. Corn yet in the field, and poor. Some vines promiscuous, at four feet; some in rows at six feet. Country disagreeable; many beds of torrents, without a drop of water, and shocking to the eye. Apricots, plumbs, melons, &c. ripe, sold in the streets, from the open ground. A pair of very fine cream-coloured oxen, 24*l.* English: the amazement is, how they can be kept in such order, in a country so arid and desert, and that has not a pound of hay in it.

The country now is far more populous and better built: many vines and great cultivation, but with fallows. The soil all a strong red loam; a way cut through a vineyard of this soil, which shewed it to be seven feet deep; at the bottom, was a crop of fine hemp; indeed, the soil to the eye, was as good at the bottom as on the surface.

They plough with mules abreast, without a driver, having a line for reins, as in England; the beam of the plough is long enough to reach to the circular iron, about nine inches under the yoke, to which the mules are collared. The yokes are like those in which oxen are worked, only with collars instead of bows. This method, which is very common in France also, has both its advantages and disadvantages; it will be a light draught, when the pitch of the beam is proportioned to the height of the mules, but if the share must be raised or lowered according to their height, it will be bad both for the land and the animals. To have the line of traction, from the draught to the body of the plough, is not quite correct, but it is much better than the common plough beams, made either too long, or too short: in this case, the length of the beams is ascertained: but the chief origin and intention of it, is cheapness. The mould-board of the plough here, has no iron on it, and is fixed to the left side; the share is double, as if to work with a mould-board on either side; this is a great fault; only one handle. It did its work tolerably. The wheat in sheaves is yet in the field, but the stubbles all ploughed, a narrow slip only left, on which the wheat remained: this shews good attention to the succession of crops.

Prices of Provisions, &c. at Barcelona.

Bread, 4*s.* and a fraction, per lb. of 12 oz.

Mutton, 22½*s.* per lb. of 36 oz.

Pork, 45*s.* per lb. of 12 oz.

That of the poor people, very little less; but they buy the soldier's bread, which comes cheaper; they live very much on stock-fish, &c.

Hams sometimes 3 or 4 *pesettos*, or shillings, per lb. of 12 oz. Wine, 4*s.* or 5*s.* the bottle.

Common day wages, are 25*s.* French; sometimes rise to 33*s.*; the very lowest, 22½*s.* Stocking weavers earn 33*s.*

Cream-coloured oxen in carts, their horns sawn off to the length of six inches, two yoked abreast, and one mule before. A pair of good oxen sell at 25*l.* English. Vale from a quarter to half a mile broad.

All the corn in the country, is left in the field till it is threshed, and they say it never takes hurt. A hill cut through, thirty feet deep, for the road, and walled on each side. The sea close to us on the right, all the way; and the vale I speak of, is between that and the hills: some of them are sandy, and planted with vines, which yield, per journal, four charges, the charge selling at 13 or 14 *pesettos*, and a journal for 300 Spanish livres; this is the journal, selling for 35*l.* 8*s.* 9*d.* and producing about 2*l.* 14*s.* very inadequate to the value of the land; there are great quantities of fruit-trees of all sorts.

At Gremata; after which, a vale for a mile and a half, or two miles, the soil sandy; and much cultivation. On the hills, many vines. Some corn without fallows; it is all cut, but not carried, and the land all ploughed.—Vines.

A wheat stubble ploughed up, and the land sown with buck-wheat, which is now up.

Part of a vale highly cultivated, but a great part waste, though on the same level to the eye, but much spoiled by a torrent, for a quarter of a mile broad; it is entirely ruined, yet there is no water now, nor any channel, all being level; in such cases as these, and indeed in most others, industry, united with good capitals, would remedy the evil. Eight men working a sandy field, by way of digging with an instrument very common here, a sort of hoe, sixteen inches long, and nine broad, with a handle so short, that the body is bent very much in using it. Vale two or three miles broad, and unites with an opening in the mountains. French beans often under maiz, but that crop much thinner,

thinner, and nothing gotten by it. Some very fine orange-trees, near twenty feet high, large stems, and thick round umbrageous heads. All this vale before Maturo, is under a very fine cultivation. They have much lucern; and an article of attention, I had not before observed, was, tubs made on purpose for carrying the riddance of privies and urine to their fields.

Hemp yields ten quintals the journal. Vineyards give three, four, and five charges of wine per journal, and sell for 200 or 300 Spanish livres the journal: other lands, not irrigated, from 100 liv. to 150 liv. For above a league, vines on sand; very little other cultivation; the vale is two miles broad; sells at 150 liv. Spanish, the journal; on the hills, and near the sea, vines; mountains cultivated, imperfectly, almost to the top; but there is much waste. Houses scattered every where.

The cultivators are *metayers*, that is, they pay a portion of the crop instead of rent: the produce is divided into three parts; two for the farmer, and one for the landlord, in which case, the farmer is at every expence whatever. Some vineyards are let at from 15 to 40 *pesettos*; I have not met any where in France with vineyards let, for they are all in the hands of the proprietors. Land in general lets from 15 liv. to 35 liv.

Come to a great cultivated vale, but no water, or but little; maiz, six inches to two feet high, in squares, on land from which the corn has been cleared; the account we received. I suspect the highest to be previously sown in a bed, and transplanted as soon as the land was ready to receive it; millet also after corn; the soil a rich black loam.

Pass Malgra. Vale two or three miles broad; vines and cultivation. A great deal of fine maiz, called, all over Catalonia, *Milia*. I found the same name for it afterwards in Languedoc, where they speak the same language as the Catalans. Lets for 15 liv. one with another. Maiz is sown, grain by grain, after corn; the soil a granite sand. A thick woodland, all inclosed. Pomegranates make very fine thick hedges. Much wood and vines—no watering nor fallows—houses scattered every where—soil sandy, but good. Very bad ploughing—cream-coloured oxen. Inclosures become still thicker. Poplars planted over some fields, and vines trained to them, and from one to another: reading accounts of this husbandry in books, I had formed an idea, that it must be singularly beautiful to see festoons of vines hanging from tree to tree, but there is nothing either pleasing or striking in it, and the wine is never good for want of fun, and owing to its being dripped on by another plant, which robs it also of its nourishment; corn is sown under them, which is damaged still more. Broad flat vale, formed of the ruins of granite.

Pass for several miles in a vale, where the country has different features. It is all inclosed—much oak—a few vines, trained up trees. Soil bad. Two poor bits of meadow I noted, for they were the first I had seen bad in Spain. Many fields over-run with spontaneous rubbish. Maiz and harricots cultivated here together, as in many other quarters. Some scattered houses. Much waste on gentle hills that have vineyards on them, and would all yield that production, if planted. A sloping hill of granite sand, well cultivated. Vines, trained to oak and poplars, with many fruit trees. The price of wheat here is 15 or 16 *pesettos*, for the $3\frac{1}{4}$ *quarterons*, weighing $5\frac{1}{4}$ quarters, and each quarter 26 lb.; this is 143 lb. of wheat, costing $15\frac{1}{4}$ *pesettos*, which will be 50s. the English quarter. Barley half the price.

Come to a great waste, spreading over many hills, for several miles; to northern eyes, a most extraordinary scene. It is a thicket of aromatic and beautiful flowering shrubs, with very little mixture of any that are common with us. Large spreading myrtles, three or four feet high, and covered with their sweet-scented flowers, jessamines, bays, and other shrubs, with which we crowd our shrubberies, are here worse nuisances than heath with us, for we saw neither sheep nor goats. View after this, a large plain, bounded by mountains, and scattered every where with houses—a good deal of cultivated inclosure. But, on entering, find much waste in this plain. Vines now form hedges, and surround the fields. Come now to cattle, of which we have hitherto seen very little; saw several small flocks of sheep, most of them entirely black, some without horns, others with, and curling round the ears. All the oxen cream-coloured; except two, with the necks and end of their tails black; all well made, and in fine order. Large breadth of corn, and some fields left apparently to grass. I suspect fallows.

The country still thickly inclosed, some pieces of grass, and a few of meadow, which are not burned, hot as the climate is. More cattle here than we have yet seen. They keep their sheep and hogs (all black) together, and the girls, &c. who attend them, spin hemp.

Pass Goronota; and many wastes for some miles on gentle slopes; the soil good, but covered with aromatic shrubs; no cattle seen in any of them. Level vale with much culture, and much pasture: many large oaks on old double banks; also tall poplars: all inclosed, and like many parts of England, as maiz and vines are not here; a thick woodland. In this part, the soil is a deep, rich, brown, adhesive loam: the corn not carried, but the land ploughed and sown with French beans. They have pease, beans, maiz, hemp, &c. without watering, and, that circumstance considered, the crops are good. The
ploughs

ploughs are drawn by cream-coloured oxen, guided by a line, and without a driver. Some meadows without water; with many quails. They are *metayers*, paying the landlord one-third of the produce; but not of *phang*, which is for oxen; *phang* is their name for clover; and this the first time we met with any information about it. It puzzled us much to discover, what *phang* could be; but I found, by accident, a plant of *trifolium alpestre*, and shewing it to a farmer, found, by his description, that it was clover (*trifolium pratense*) beyond all doubt. They were now ploughing a wheat stubble, in order to sow it directly with *phang*. Their culture of it is singular, and very good; it is mown for hay once in the spring, yielding a fine crop; the land directly ploughed, and planted with *monget*, which is their name for fallow-hoeing crops, such as French beans, millet, pease, &c. This *monget* is kept very clean, and wheat sown after it, which is off soon enough for a second crop of French beans. A course with them is,

1. Maiz.
2. Wheat, and sown after with clover.
3. Clover and French beans.
4. Hemp and French beans.
5. Wheat and millet.

Vines are here planted in espaliers; small poles are laid on pegs driven into posts, which stand at six or eight feet asunder, and the vines trained to them; corn is sown between the rows; good land, yet waste join it. Many hedges are planted with the yellow-blossomed prickly acacia, which answers perfectly well for that purpose.

Within four miles of Gerona, husbandry continues good. Trees have vines trained to them. Much cattle, mules, horses, sheep, and hogs, kept in the stubbles: fine cream-coloured oxen in the ploughs. The soil, fine deep reddish loam. Now reaping a crop of square pease, three feet high, stout as lupines, with pods like that plant; all here, an inclosed woodland. Hemp, six feet high, and not watered. To the left of Gerona, mountain beyond mountain, branches of the Pyrenees, and very high; but seemingly a good deal of cultivation on them. Fine rich deep soil in the vale before Gerona; the same husbandry—crops of corn, very fine, not carried, though all the land quite green with young millet; this extreme confidence in the climate, shews clearly what it must be.

A journal of the vale land sells for 200 Spanish livres, or 23l. 12s. 6d. and lets at 8 liv. to 10 liv. that is, 1l. 1s. English; but none of it is irrigated. They do not tithe either lambs or other live stock.

Price of Provisions at Gerona.

Bread, 3*s.* per lb. of 12 oz.; and excellent.

Beef, 10*s.*

Mutton, 6*s.*

Pork, 8*s.* per lb. of 16 oz.

Cheese, 20*s.* per lb. of 12 oz.

They have no mutton or beef, except what comes from France.

The poor live chiefly on vegetables, and a little pork: their labour, 20*s.* a day.

Leave Gerona.—Fine maiz, planted thin, with good cabbages under it: this is a system which promises well; but cabbages here, are only for the people, and not for cattle. Three measures and a half make a journal, and a pair of oxen plough three measures a day; buy their oxen in the French mountains, at a year old. Their hills are either wood, or cultivation, but mixed with part rocky waste. Cross some hills, which contain a great deal of waste, but see a broad valley to the right; all inclosed, and well cultivated; to the eye rich; houses scattered.

At Marenia, iron, 4*s.* or 5*s.* per lb. of 16 oz. The road up a hill; twenty or thirty women giving it a winding direction, by levelling earth; on inquiry, find it is done by the communities, and that they earn nothing; hence it is by *corvees*. Enter a wood of cork-trees; many of them barked half way up; the texture of this tree is remarkable, it seems formed of layers of bark, one under another.

The country now generally cultivated; the fields ploughed, but have had a crop. Some well-planted olives, ploughed under. All the corn we see is wheat; as to barley, it was cut and threshed the first week in June, and the land ploughed and sown with something else.

From Gerona to Calderoles, three hours and a half, generally cultivated; but wastes scattered, and mountains every where in sight. The course here, is,

1. Barley, left to weeds, &c. for cattle.
2. Wheat and millet, or French beans.
3. Oats or barley, and maiz for cattle.

No fallow, or *phang*; French beans are called *phasols*.

Leaving Calderoles, the country all cultivated; many olives, and under them vines; all well inclosed; no waste.

Pass Basera; a torrent has here destroyed a vale half a mile broad; pass it by a ferry. Country now neither so rich, nor so well cultivated, as on the other side of that town. Maiz planted at six feet, and two rows; French beans in the intervals; olives scattered; but the maiz very poor under them. Country more poor and stoney, yet but few wastes. Olives and many tall pines. Wastes with pines; the sea two miles to the right, and the ridge of mountains in the front, seems to end abruptly at it. Many vineyards, and planted with olives; all under culture, and well inclosed with acacia hedges; several with ditches to them.

The vale of Figuera bounded finely by the mountains; many olives and vines, and a good deal of corn; but neither soil nor cultivation equal to what have passed; the former is more of a stone brash. Reach Figuera.

The 21st left Figuera, and breakfasted at Jonquieras. Enter the bottom of the mountains very soon; pass through many olive grounds; the trees are large, and stand about sixteen feet asunder; soil good red loam, but stoney; no watering. A quart of oil, 2½ lb. of 12 oz. sells, retail, for a *pejetto*. Olives bear only every other year. Our guide says, he knows a tree, in Arragon, which yields from 50 lb. to 80 lb. for a crop. In these twelve miles to Jonquieras, vines scattered all the way on the hills; some few olives; many cork-trees, latterly: much cultivation, but a good deal of waste also. French beans in rows, and ploughed between with oxen. Soil all the way a granite sand.

The first leading feature of the minutes, is the immense quantity of mountains, and other wastes, which are found in every part of Catalonia. We travelled about three hundred and forty miles through the province, and may conclude, from what we saw, without any danger of being deceived, that not one acre in an hundred is under any sort of cultivation; in such gross calculation, one would take care to be within the truth, and if I said, not one in one hundred and fifty, I believe I should still be on the safe side of the assertion. When this fact is connected with the reputation which the province has, of being next to Valentia, the best cultivated, and, without exception, the most industrious in Spain, conclusions, very unfavourable to the state and policy of that monarchy, must necessarily be drawn by every reader. The advantage of possessing the second city of the kingdom, a place of great trade, and containing one hundred and twenty thousand souls, is very considerable, and must have done much, to bring the province even to its present situation. At the same time, that these boundless wastes were offending the eye, in every quarter, we could, in no part of Catalonia, condemn the people for want of industry; on the contrary, they seem very well to merit the character they have gained:

gained: the activity which is seen through all the towns upon the coast, and they are very numerous, and very populous, can hardly be greater, in a country submitted to numerous festival days, by its religion: the fishery in all those places is considerable, and attended to with an unabating spirit. The women and children make lace; and wherever the soil is good, or water conducted, cultivation is in a high state of perfection. Even in the interior country, we saw, every where, signs of much industry; and, amidst a poverty which hurt our feelings, we generally saw something to convince us, that it was not the fault of the poor people, that greater exertions were not made. Those interior parts depend entirely on their agriculture; and the height to which they climb the mountains, in order to find a spot tolerably level for cultivation, shews that their minds and bodies are ready for laborious exertions, whenever there is a prospect of enjoying the reward. With so much industry among the people, to what are we to attribute the waste state of their country? The inquiries necessary for a complete investigation of such a question, were not to be made by travellers: a longer residence would have been necessary; but a few circumstances should be mentioned, which are, probably, connected intimately with it.

First, the poverty of the people in the interior country is striking; their towns old, ill built, dirty, and wretched; the people ill dressed, and generally deficient in the wealth, best adapted to such a country, cattle: in the higher Pyrenees, this is not so much the case; they have cattle, and are in every respect in a better condition, owing to the plenty which great commons give in a country of good pasturage, and where wood is in profusion. The number of sheep we saw in general, was not the twentieth part of what the wastes, bad as they are for that animal, would maintain; and that of goats, so small, as to indicate the same thing strongly. This poverty, not being the effect of a want of industry, must result from a government inattentive to their interests, and, probably, oppressive; and from a total want of the higher classes residing amongst them. Till we came to the rich country, near Barcelona, that is to say, in about two hundred miles, we saw nothing that had the least resemblance to a gentleman's country seat; those who have estates *let in it are absent*; those we heard of, live at Barcelona; and the whole country is thus abandoned to the very lowest classes; and the wealth and intelligence, which might contribute to its improvement, diverted into distant and very different channels; this is a great misfortune to the people, and which will long contribute to keep things in their present state. To the same cause it is owing, that the roads, so essential in the improvement of a country, are left in a state which precludes the use of wheel carriages; which, with the unnavigable state of all
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the rivers, except for rafters of timber grossly put together, cuts off that system of reciprocal purchase and sale, that interior commerce, which is the best a country can possess. These are also evils, which the residence of men of fortune is the most likely to correct; and much above the power of peasants and mountaineers. With all these disadvantages, there are still circumstances which make it surprising, that more land is not cultivated. Vines and olives succeed very well on the poorest, and most arid soils; their growth and luxuriance, in spots surrounded on every side with wastes, and in soils not better, yield a conviction, which leaves no doubt, that the adjoining lands would, if planted, give a similar produce. The profit of doing it will not be suspected, if the revenue and value of cultivated lands, on comparison with the wastes, be considered. Two points here, force themselves on our notice; first, the want of capital for undertaking the work; and, secondly, the waste being in all probability in possession of absent landlords, who will not give sufficient encouragement to others to do what they neglect doing themselves.

Where cultivation climbs up the mountain sides, it is by small proprietors, who purchase of the communities of the parishes the property of the land; wherever the soil is in hands that will sell just the portion, which is in the power of a man to buy, great exertions are sure to be the consequence. There is no spur to industry so great, as the possession of a piece of land, which, in a country where the means of subsistence are contracted for want of more diffusive and more various employments, is the only comfortable dependence of a man, who wishes to be the father of a family. The parish that will sell a waste, at a moderate price, will be almost sure to see it cultivated; but the great lord, who rarely, or never, sells any of his property, unless ruin forces him to sell the whole, is equally sure of perpetuating the deserts, which are the disgrace of his country. He would let them, and perhaps upon advantageous terms; but it demands considerable capitals, and a very enlightened state of agriculture, for speculations of that sort to take place; the only capitals, which can be found in Catalonia, for such a purpose, are the hands of men willing to work; aided, perhaps, by some little savings, which have originated from the view of wastes that are to be purchased. All that has been done, and it is much in some districts, is to be traced clearly to its origin.

That these observations are just, will be confirmed by the prices of all the necessaries of life in that province; they have nothing very cheap; every article of consumption is somewhat dearer than in France; and it is more than once noted, that all the meat they eat comes from that kingdom. Their mules are bred in France, and great imports of cattle and sheep are common. This is a direct premium upon every species of rural industry, and its not
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having operated greater improvements, must be owing to the causes on which I have touched.

To cultivate their wastes, to spread irrigation wherever it is possible to carry it, are the two first objects in Catalonian improvement; all others are inferior; they have, however, some which ought not to be neglected. Their wine and oil are objects of the greatest importance; for it is by these, probably, that all the lower wastes should be improved, which are not capable of irrigation; to improve the manufacture of these two articles, in such a manner as to increase the demand for them, would be one great means of accelerating the cultivation wanted; they are both bad; the wine is thick, muddy, and poisoned by the borachio; and the oil is generally rancid; both would otherwise be excellent; to remedy these defects, and force those commodities, by their merit, into commerce, would tend powerfully to enrich the province; and to enrich it in the very best method, by one, which would, at every step, accelerate its improvement. Wool is another commodity, which is of considerable value, and might be produced in an infinitely greater quantity than at present.

The reader will not expect from a traveller, who throws his ideas on paper amidst the movements of a journey, that correct attention which leaves nothing untouched; I attempt no more than to glance at some prominent features, and to delineate them roughly; to draw into one point of view, the conclusions which ought to be the object of all useful travels, it would be necessary to see much more, to reside longer, and to travel with greater advantages than I possess. This little journey has been very far from affording such materials, but it has not to me been barren; it has removed many false ideas from my mind, which the writings of men, who have either been inattentive to, or ignorant of agriculture, had placed there, relative to this province; and I know better how to appreciate the praises or condemnation, which are given of this or other countries, in similar climates.

There are many persons who travel, for enjoying the beauty of prospect;—and there are others, who seek for a residence better adapted than their own, to their health or their fortune; to such I will add a few words.—To the taste of a man that is fond of a country in a northern climate, there are few objects more pleasing to the eye, or more refreshing to the imagination, than the natural landscape scenes of a well-cultivated and well-peopled country. These have, in England, features that charm and instruct. Inequalities of country, not too abrupt; woods that present rich masses of shade; rivers that offer the contrast of their silver bosoms, gliding gently through vales of constant verdure, which are neither hurt by their rapidity, nor rendered marshy
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by their sluggishness; inclosures, which mark the value and the culture of the soil; and scattered habitations of the poor, clean and comfortable, mixed with the houses of farmers, in a state of ease and prosperity; and with the seats of gentlemen, who find society and liberal pleasures, without deserting the fields which gives them their support, for the profusion and waste of a capital. No philosophical eye can view such a scene without pleasure, nor contemplate it without instruction. Such a scene is not to be met with in Catalonia; the latitude which spreads over their heads a clear expanse of blue, which lightens up in their heavens a blazing sun, with rays of which we have no feelings, which bids the perfumes of the east breathe over their wastes, and gives to their gardens a profusion of most delicious fruits, forbids it. Infinitely the greater part of the province is rock or mountain, without verdure, and without other wood, than ever-green oaks, olives, or pines; and no where, except in the Pyrenees, with any masses of shade that give effect to the prospect. The only verdure in the country, tolerably durable, is that of the vineyards. Great wastes are covered with shrubs, which, however beautiful, when detached, have very little effect in a general prospect. To look for neat cottages, or good farm-houses, is to look in vain; and to find the landlords of the country, you must go to Barcelona and Madrid. The deficiency of verdure, destroys half the idea of rural beauty; the eye, dazzled with the unvarying splendour of the solar beams, and tired with wandering over arid heaths, aches for cooler and more quiet scenes, and languishes to repose on the verdant mead. When watered, where alone there could be verdure, all is a crowded scene of trees, and corn and hemp; of glorious fertility, but forming the good feature of a landscape, only when looked down upon from an eminence immediately above it. Hence, I own, that in respect of beauty of prospect, I must prefer many parts of France, and more in England, infinitely to any thing I saw in Catalonia, a country whose most striking features are its rocks.

I take the climate to be equal to any thing that is known in the world; I was there in the hottest season of the year, and travelling twelve and fourteen hours a day, yet bore it without any such oppression as could give an idea of its ever being insupportable; and both men and women stood their field business through the day, except two hours, which they take for repose. Supposing, however, that July and August are esteemed much too hot, still the rest of the year must, from every circumstance we heard, be delicious—they spoke with rapture of the pleasantness of the month of May; and no doubt but the winter must be a charming season, where such vegetables as green pease are gathered through every month of it, from the open fields. In regard to wholesomeness for invalids, one circumstance should be considered, which may be applied

equally to all watered arable lands: I should conceive, that they must of necessity, in so hot a climate, be very unwholesome; and little better than rice-grounds, which are known every where to be pestiferous. The land is kept constantly watered, it is therefore little better than an earth sponge, or mass of mud; innumerable fibres of vegetables are mixed with it; the heat, the moisture, and the rich soil form a putrid fermentation, which gives health and luxuriance to vegetables, but must fill the air with phlogistic effluvia, I should apprehend far from wholesome to the human body. This is a consideration for physicians, and for those whom they send to southern climates.

IRRIGATION.

THE prospects down the vale of Aran beautiful; it is without fallows, fine hemp instead of them. Look down on the town of Esteredano, around which, culture rises pretty high up the mountains. All the corn cut, is reaped, and bound in sheaves—Walnuts. Descend into the vale—Figs. Watered meadows. Ray-grass predominates; much common clover, white clover, trefoil, vetches, &c. A causeway for irrigation across the vale; the meadows are uncut, and have $2\frac{1}{2}$ tons per acre, on an average; the corn all through, 3 quarters an acre. Pass a rich flat common; part of this vale fed by horses, mules, hogs, asses, and a few oxen.

Advancing—what meadows there are, are well watered; as are French beans, hemp, and a small quantity of lucern.

Leave Poeblar; they have lucern, but not good; the gardens are all watered; mulberries; prices of silk this year, 18 liv. the pound. Cultivation all around, among the olive trees; but it is corn one year, and fallow another. Cross the river, which is here sixty yards wide. Wheels for raising the water of it into the gardens, ten or twelve feet high; they are of a very simple construction; something like the common water-wheels of a mill, but made very light; the fellics of the wheel are hollow in divisions, taking the water in through holes at equal distances, and as the stream turns the wheel, it delivers the water out of the same holes at the top of its revolution, into a trough, which conducts it where wanted; it is cheap, simple, and effectual. Many peach-trees scattered about the gardens, &c. Mount the hills; pass two

two large tracts, of above one hundred acres, destroyed by the torrents. Great quantity of pudding-stones. The mountains around are of interesting and bold features. The country in general here has a great mixture of cultivation and waste; it is for some space pleasing enough to the eye, but the produce is, I believe, very low; we saw many oats, and scarcely any that will produce more than a quarter an acre. They have no meadows; and I should observe, that our mules have not found such a thing as hay; straw and barley are their food; in all those spots which would give grass, corn and legumes are sown, as more necessary and more valuable; and this, I am told, is the case over all Spain, lucern excepted.

Near Monte Schia—they have here poor crops of flat barley: of water, they know well the value, a spring of any account being carefully conducted into a reservoir, and let out at seven in the morning and at night to water.

Advancing—there is some good hemp, watered; and I see enough of the country to find that water is all in all; where that is to be conducted, they get crops that pay well; but where no water, they have not the power or the knowledge to turn the soil, however good it may be, to a profitable account; fallow the only effort, and the success every where miserable.

Cross a fine stream with many acres under it, yet no watering; the reason I cannot tell, unless the land is common; if so, it is easily explained.

The soil stoney; the large, of the pudding class; but, in the midst of this arid wretched desert, come to a spring, which rises out of the earth into a small reservoir, and is immediately used for irrigation; maize, hemp, cabbages, beans, and all fine; the contrast shews the astonishing effect of water, and that in this climate, the soil is the least object—the sun and water do the whole.

Passing Paous; every thing changes the features; the vale, on comparison with those we have seen, is wide, and also flat, and water plentifully conducted in canals, which pass every quarter, so as to let into the field of every proprietor; having passed above one hundred miles of dreary mountain, this vale, so great was the contrast, had the appearance of enchantment; the care and attention given to irrigation, cannot be exceeded. The land is prepared for it, by levelling with a nicety as curious as for making a bowling-green, and this (conducting the water excepted, which is common to every one), is the only expence: this general level is divided into oblong beds, from six to eight feet wide, by little ridges of fine mould, drawn up nicely with a rake every time the ground is sown, in order that the water may not spread over too much at once, in which

case, the irrigation would be unequal; there would be too much of a current at the part where the water enters, a circumstance of no great importance in watering grass land, but which would be mischievous in arable; small trenches take the water from the carrier canals, and passing by the ends of those beds, the farmer opens them at pleasure, to distribute the water where wanted. As soon as the land is sown, it is watered, and periodically, till the plants are up; moderately while they are young; but every day, and sometimes twice a day, when full grown: the effect is surprising, and infinitely exceeds that of the very richest manures that can be spread upon any land. The rapidity of vegetation is so great, that there are but few crops, which demand all the summer for coming to perfection; I believe hemp is the only one; that plant is now five to seven feet in height, and of so thick a luxuriance, that nothing can be imagined finer. The rye stubbles are ploughed and sown with French beans, which are up and watered. After hemp, wheat is the crop.

Watered maiz here, seven to nine feet high. Every time we see any irrigation, we are struck more and more with the importance of water, even on soils which are apparently mere rock, and on the most arid deserts, it gives at once the utmost luxuriance of vegetation. Vines and olives, however, stand in no need of it, but thrive admirably on the driest soils without it: not one acre, however, in twenty, is planted with them that might be.

Come to more watered grounds; gardening and husbandry mixed; peaches; apples; ripe pears; pomegranates in the hedges, as large now as walnuts in the shell; onions and lettuces in great plenty. Some watered lands have been sold at 1300 liv. the journal.

Near Martorelle is a fine irrigated valley; French beans, seven feet high. Good lucern, cut three or four times a year; onions, cabbages, and lettuces; but the hemp, every where a principal crop, not great. The land all formed into the beds for watering; which I have already described.

Exceeding fine hemp, watered. Maiz thick, and in ear. Many fine and tall poplars by the river.

They are now (July) ploughing their stubbles for French beans. Their course is,

1. Hemp.
2. Wheat; and after wheat, French beans.

Three crops are therefore gained in two years. The products good. Very fine mulberries. A journal, which is here also about an English acre, of rich land in the vale, not watered, sells for 500 liv.: watered, for 1000 liv.

Leaving

Leaving Barcelona, enter immediately an extraordinary scene of watered cultivation, and which must have given the general reputation to the province. Nothing can well be finer. The crops in perpetual succession—and the attention given to their culture great. Not the idea of a fallow; but the moment one crop is off, some other immediately sown. A great deal of lucern, which is cut four, five, six, and even seven times in a year; all broadcast, and exceedingly thick and fine, from two and a half to three feet high, when cut. It is all watered every eight days. We meet many mule loads of it going into the town, each 450 lb. or 4½ quintals, which sells for 4 *pesettos*, or near 4s. English; suppose it 4s. for 500 lb. it will not be difficult to calculate the produce of an acre. All I saw would yield 10 tons, green, per acre, at each cutting, and much of it a great deal more; let us suppose five cuttings, or 50 tons per acre, at 16s. a ton, this is 40l. sterling per acre. It is to be remembered, that the growth we saw, was the third, perhaps the fourth, and that the first and second are in all probability more considerable, it will not, therefore, be thought any exaggeration to calculate on five such. I by no means assert that lucern yields always, or generally so, as I speak only of what I see. I have very little doubt, however, but this is the amount of that portion, which is thus cut and sold to Barcelona; possibly one-third, certainly one-fourth, is to be deducted for the expence of carriage; this is the most difficult part of the calculation, for it depends on how many times the mule goes in a day, which must also depend on the readiness of sale, and other circumstances. The profit is, however, amazingly great. All the other lucern I have any where seen sinks, in my idea to nothing, on comparison with the vast and luxuriant burthens given by these watered grounds. The finest crops I have known in England, are drilled, but there is a fallacy to the eye in the drilled crops, in proportion to the distance of the rows; they appear thick while they are really thin, but in broadcast ones, which satisfy the eye, there is no deception; and these immense burthens, through which the scythe is with difficulty moved, produce more at one cutting, than two feet drills would at three, with the advantage of the herbage being finer and softer. But weeds in England and Catalonia are two very different things; it well deserves, however, with us, a better trial than it has yet generally received; I have viewed broadcast crops; particularly Rocque's, on a very rich garden soil; and Dr. Tanner's, on a common turnip loam, which, though not to be named with the Spanish, were certainly encouraging.

Hemp, through all these watered lands, is the predominant crop, it is seven feet high, and perfectly fine; some of it is already harvested. I am sorry to see that the watered part of the vale is not more than a mile broad. Indian fig,
called

called here, *figua de maura*, grows six or seven feet high, very branching and crooked, the arms at bottom as thick as the thigh of a common man; those and many aloes in the hedges. Every garden or farm has a small house, with a reservoir for water, which is filled in most by a water wheel, with jars around the circumference. The gardens between Barcelona and the fort, and also within the walls, are watered in the same manner; the water is let into every little bed, in the same way as I have already described. They are crowded with crops, and kept in most beautiful order; those in and close to the town, scattered with mulberry-trees. But in the district of which I am speaking at present, among the hemp and lucern, neither vine, olive, nor mulberry. These watered lands belong generally to proprietors who live in Barcelona, and are let at 30 to 40 Spanish livres the journal.

The valley, in its widest part, is three miles broad. Here it lets at 34 Spanish livres a year the journal, and sells from 600 liv. to 1000 liv.; each of these livres being about 54s.: (1000 Spanish livres makes 2700 French ones). Taking the medium, or 800 liv. and the French livre at 10½d. this makes the price of a journal 90l. 2s. 6d.; and the rent of it 4l. The gross rent of the land, therefore, pays nearly 4½ per cent.; but whether this is clear rent, the tenant paying all taxes, and doing the small repairs of his house, &c. or whether there are deductions on these accounts, are questions which were neither forgotten nor resolved. To shew the quick succession of their crops, they have corn in stooks on the borders of some of the fields, and the land ploughed and sown with millet, which is already nine inches high. Many bleaching grounds.

Advancing—the irrigated land lets from 24 to 40 Spanish livres: that not irrigated, at 15 liv. Water, therefore, here more than doubles the rent of the land; and in other places, we have found the difference yet greater. The soil all the way a red and brown deep friable loam, with a sufficient adhesion for any crops. They sow French beans after hemp, and then sow wheat.

At Ballalo, two hours from Barcelona, we meet with the first vineyards, but the hills here come down to the sea; and where they do not, the vale is not more than half a mile wide. Lycium in the hedges; some few mulberry-trees. Oranges in the gardens; a few palm-trees, with vines around them.

A journal of watered hemp, produces from 10 to 12 quintals; if not watered, the product much inferior; the price, 14 to 17 Spanish livres the quintal, or 35s. English, which makes 19l. 5s. an acre. This is, however, to be understood of a very fine acre. The mountains are at half a mile distant, and partly

partly cultivated to the top. All the way inclosed, and the men mending gaps in their hedges.

Every scrap of flat land well watered, from wells and reservoirs; the hill covered with vines.

Land, near Canet, well watered, sells for 500 Spanish livres the journal; vineyards for 300 liv. They give, in good years, to 12 charges. Unwatered land, 100 to 150 liv.

Enter a flat vale, half a mile broad, not watered. Hemp, very poor; maiz, seven feet high. Vineyards, under regular plantations of olives; corn cut, in flocks, and the land ploughed. A journal sells for 200 liv. and further on, where irrigated, for 1000 liv. which is an astonishing difference.

While the mountains and waste parts of the province present an unfavourable prospect, the watered districts are, on the contrary, scenes of most exuberant fertility. To a person, from the north of Europe, there can hardly be a more striking spectacle than the effect of watering in these southern climates; it converts an arid stoney waste, which would yield nothing but vines and olives, and on which every sort of grain would hardly return the seed, at once into fields, pregnant with the richest harvests; on such soils, it gives almost the whole value of the land; and on the richest, it raises it, at the least, double; and, in some instances, five times. It enables the cultivator to have a succession of crops, more important than any thing we know in the north. The reaping one crop is but the signal for immediately putting in another; in doing which, they exert themselves with the utmost activity; ploughing universally as soon as the corn is cut; and are, by this means, enabled to have constantly two crops a year. The extreme fertility of these lands has, however, led many travellers into great or ignorant exaggerations; they have asserted, that the land yields many crops at the same time, one under another, which is both true and false. It is fact, that corn, wine, oil, and silk, are produced by the same field, in some few instances; but it is not from hence to be concluded, that the goodness of the land, or the importance of irrigation, is at all shewn by that circumstance. The fact is, that it is impossible to raise one crop under another, without losing in one nearly as much as you gain in the other; the olive, being a large tree, cultivation may be carried on under it, but the crop gained is poor, and shews, that exactly in proportion to the shade is the injury sustained by the produce which is shaded. If the trees are thick, the corn is hardly worth reaping; it is the same in other cases, and I was well convinced, from viewing their grounds with this design, that the soil can
carry,

carry, profitably, but one crop at a time; several may be crowded on it, but nothing is gained; with grass under trees, this is not the case so much in a hot climate; but even grass is damaged, and it is not the question, at present, as they have none. A country to be supported, and in a hot climate, without meadows or pastures, sounds very strange to English ears, and it is among the curious circumstances of this part, and I am told of the rest of Spain. If they applied to grass the land that is proper for it, they could not possibly have bread to eat; straw here is given instead of hay, and entirely supplies its place, and the oxen and mules, which we saw, did not shew in the least, by their looks, any deficiency in nourishment. Lucern is not at all common through the interior part of the province, and where they cultivate it, it is used green. Maiz is sometimes sown merely for its herbage, as it might be, I believe, profitably in England, late in the spring, to avoid our frosts; it is one of the most nourishing plants in the world.

The consequence of water being so apparent in the province, I could not but attend particularly to their exertions in conducting it, and I concluded, that not one acre in twenty, perhaps in forty, is watered, that might be. In the flat vales, where canals of irrigation are made, at a small expence, a very good, though by no means a complete, use is made of them; but on the declivities of the mountains, it is necessary to erect a mound of solid masonry across the river, and to cut the canal partly out of rocks, and to support it by walls of stone, as I have seen in France; and having thus diverted a large portion of the water of a river, to carry it on its level, along the side of the mountain as far as it will go; such exertions demand a much greater capital, than is to be found upon the lands of Catalonia: it could be done only by a great lord, who knew the importance of such undertakings, who resided on his estate, and whose income was spent in something else than the taste and pleasures of a capital. But leaving such exertions to individuals, who either have not the money, or not the will to employ it, is to perpetuate wastes. It is the King only who can make those efforts; a monarch, who should be determined to improve his kingdom, would presently find the means of doing it. The importance of water is so well known, that if a canal is made to conduct it, the proprietors, or farmers of the lands below, would readily and speedily make use of it, paying proportionably for the quantity they took; this is the system in Lombardy, and the effect is great. It would be the same in Catalonia, but the capital, for the great work of the canal, must probably be supplied by the king, if not the whole, at least a considerable portion. Such money should be lent to undertakers, at a moderate interest. Exertions of such a nature, with a proper general attention given to these objects, would make them

them fashionable among the great lords of the kingdom, and fertile provinces would soon be created out of barren and desolate wastes. Arbitrary power has been exerted for ages, in efforts of barbarity, ignorance, and tyranny; it is time to see it employed in works, that have the good of mankind for their aim. A beginning, and a very good one, is made in the construction of some great roads, on a scale of true magnificence, which is never exhibited with such effect, as in works of public utility; and whenever the importance of cultivation is well understood in Spain, and the right means of advancing it clearly analyzed, irrigation will then receive an attention that has not, hitherto, been given. Such is the necessity of water, for various productions in this climate, that rivers ought to be no more than infinitely multiplied channels, and collected in one stream only, as a reservoir for fresh, and repeated deviations.

S H E E P.

ON the northern ridge of the Pyrenees, bearing to the west of Bagnere de Luchon, are the pastures of the Spanish flocks. This ridge is not, however, the whole; there are two other mountains, in a different situation, and the sheep travel from one to another as the pasturage is short or plentiful. I examined the soil of these mountain pastures, and found it in general stoney; what in the west of England would be called a *stone brash*, with some mixture of loam, and in a few places a little peaty. The plants are many of them untouched by the sheep: many ferns, narcissus, violets, &c.; but burnet (*poterium sanguisorba*), and the narrow-leaved plantain (*plantago lanceolata*), were eaten as may be supposed, close. I looked for trefoils, but found scarcely any: it was very apparent, that soil and peculiarity of herbage had little to do in rendering these heights proper for sheep. In the northern parts of Europe, the tops of mountains half the height of these, for we were above snow in July, are bogs; all are so, which I have seen in our islands, or at least, the proportion of dry land is very trifling to that which is extremely wet: here they are in general very dry; now a great range of dry land, let the plants be what they may, will in every country suit sheep. The flock is brought every night to one spot, which is situated at the end of a valley on a river, and near the port or passage of Picada: it is a level spot sheltered from all winds. The soil is eight or nine inches deep of old dung; not at all inclosed, and, from the freedom from wood all around it, seems to be chosen partly for safety against wolves and bears. Near it is a very large

large stone, or rather rock, fallen from the mountain. This the shepherds have taken for a shelter, and have built a hut against it; their beds are sheepskins, and their doors so small that they crawl in. I saw no place for fire; but they have it, since they dress here the flesh of their sheep; and in the night sometimes keep off the bears, by whirling fire-brands: four of them belonging to the flock mentioned above, lie here. Viewed the sheep very carefully, and by means of our guide and interpreter, made some inquiries of the shepherds, which they answered readily, and very civilly.

A Spaniard, at Venasque, a city in the Pyrenees, gives 600 liv. French, (the livre is 10 $\frac{1}{2}$ d. English), a year, for the pasturage of this flock of two thousand sheep: in the winter he sends them into the lower parts of Catalonia, a journey of twelve or thirteen days; and when the snow is melted enough in the spring, they are conducted back again. They are the whole year kept in motion, and moving from spot to spot, which is owing to the great range they every where have of pasture. They are always in the open air, never housed, or under cover, and never taste of any food, but what they can find on the hills.

Four shepherds, and from four to six large Spanish dogs, have the care of this flock; the latter are in France called of the Pyrenees breed; they are black and white, of the size of a large wolf; a large head and neck; armed with collars stuck with iron spikes; no wolf can stand against them; but bears are more potent adversaries; if a bear can reach a tree, he is safe, he rises on his hind legs, with his back to the tree, and sets the dogs at defiance. In the night, the shepherds rely entirely on their dogs; but on hearing them bark, are ready with fire-arms, as the dogs rarely bark if a bear is not at hand. I was surprised to find that they are fed only with bread and milk. The head shepherd is paid 120 liv. a year wages, and bread; the others, 80 liv. and bread. But they are allowed to keep goats, of which they have many, which they milk every day; their food is milk and bread, except the flesh of such sheep or lambs as accidents give them. The head shepherd keeps on the mountain top, or an elevated spot, from whence he can the better see around, while the flock traverses the declivities. In doing this, the sheep are exposed to great danger in places that are stoney; for by walking among the rocks, and especially the goats, they move the stones, which, rolling down the hills, acquire an accelerated force enough to knock a man down, and sheep are often killed by them. Examine the sheep attentively. They are in general polled, but some have horns; which in the rams turn backwards behind the ears, and project half a circle forward; the ewes horns turn also behind the ears, but do not project; the legs white or reddish; speckled faces, some white, some reddish; they would weigh fat, I reckon, on an average, from 15 lb. to 18 lb. a quarter.

quarter. Some tails left long. A few black sheep among them; some with a very little tuft of wool on their foreheads. On the whole, they resemble those on the South Downs; their legs are as short as those of that breed; a point which merits observation, as they travel so much and so well. Their shape is very good; round ribs, and flat straight backs; and would with us be reckoned handsome sheep; all in good order and flesh. In order to be still better acquainted with them, I desired one of the shepherds to catch a ram for me to feel, and examine the wool, which I found very thick and good of the carding sort, as may be supposed. I took a specimen of it, and also of a hoggit, or lamb of last year. In regard to the mellow softness under the skin, which is a strong indication of a good breed, with a disposition to fatten, he had it in a much superior degree to many of our English breeds, to the full as much so as the South Downs, which are, for that point, the best short-woolled breed which I know in England; the fleece was on his back, and weighed, as I guessed, about 8 lb. English; but the average, they say, of the flock, is from 4 lb. to 5 lb. as I calculated by reducing the Catalonian pound of 12 oz. to ours of 16 oz.; and is all sold to the French, at 30*s.* per lb. French. This ram had the wool of the back part of the neck tied close, and the upper tuft tied a second knot, by way of ornament; nor do they ever shear this part of the fleece for that reason; we saw several in the flock with this species of decoration. They said that this ram would sell in Catalonia for 20 *liv.* A circumstance which cannot be too much commended, and deserves universal imitation, is the extreme docility they accustom them to; when I desired the shepherd to catch one of his rams, I supposed he would do it with his crook; or probably not be able to do it at all; but he walked into the flock, and singling out a ram and a goat, bid them follow him, which they did immediately, and he talked to them while they were obeying him, holding out his hand as if to give them something. By this method, he brought me the ram, which I caught, and held without difficulty.

The mountain pastures belonging to the Spaniards, not used by themselves, they let to the owners of large flocks, who bring them from the lower part of Catalonia, as with the French mountains; these flocks rise to 4000 sheep; the rent, in general, being from 5*s.* to 7*s.* a head, for the summer food. Every inhabitant possesses cattle, which he keeps in the common mountains in what quantity he pleases; but others, who do not belong to the parish, pay 5*s.* to 7*s.* a head for the sheep, and 10*s.* for a cow; which disproportion they explain, by saying, that sheep must have a much greater range.

They have good sheep in various parts of Catalonia, but all are sent to Saragosa or Barcelona.

The mountains and wastes in some parts have no sheep; only goats.

Cross great wastes, which in other countries would be sheep-walks; but none here; for five-sixths of the spontaneous growth are aromatic plants.

See two small flocks of sheep, exactly like those in the Pyrenees, described the first day of this journey.

A small flock of sheep, that give 5 lb. or 6 lb. of wool each.

Several small sheep-folds.—Such notes as these, shew how few they are, on comparison of what they ought to be.

In travelling over the lower mountains, after quitting the higher Pyrenees*, the deficiency of sheep struck me very much; the climate is too dry to think of a luxuriant vegetation of grass; but if the rosemary, lavender, and other aromatic useless plants were destroyed, and the land, by cultivation, properly adapted, was to be laid down to such plants as would feed sheep, fine pastures might not be gained, but much valuable sheep-walk would be created, and the quantity of wool increased an hundred fold. Such a system would unite well with olives, which might be thinly scattered over such improvements. To import immense quantities of sheep from France, and to take no steps to increase them at home, is a blind conduct, especially when it is considered, that in a proper system, they cannot be increased, without being at the same time, the means of improving fresh land.

Produce of the Kingdom of Valencia in 1787.

	<i>Reals de Vellon.</i>	English Money,		
		£.	s.	d.
Silk, 2,000,000 lb. at 60 reals, - -	120,000,000 -	2,000,000	0	0
Hemp, 25,000 quintals, at 160 reals, -	4,000,000 -	66,666	13	4
Flax, 30,000 quintals, at 200 reals, -	6,000,000 -	100,000	0	0
Wool, 23,000 quintals, at 160 reals, -	3,680,000 -	61,333	6	8
Rice, 140,000 cargas, at 150 reals, -	21,000,000 -	350,000	0	0
Oil, 10,000 quintals, at 180 reals, -	1,800,000 -	30,000	0	0
Wine, 3,000,000 arrobas, - -	84,000 000 -	1,400,000	0	0
Dry raisins, 60,000 quintals, at 40 reals, -	2,400,000 -	40,000	0	0
Figs, 60,000 quintals, at 32 reals, -	1,920,000 -	32,000	0	0
Dates and palms, - - -	1,200,000 -	20,000	0	0
		£. 4,100,000	0	0

* There is no line of boundary to be fixed, with any precision, to the Pyrenees; I am inclined to think, that all the mountains we saw, Montserrat perhaps excepted, are branches of that stupendous chain, uniting in some direction. The whole mountainous part of the province, that is, eighteen-twentieths of it, is properly the Pyrenees.

Prices at Madrid, 1788.

	<i>Average.</i>	Eng. Money.	
		s.	d.
Beef, 14 to 15 <i>quartos</i> per lb. - - - -	15 <i>quartos</i> .	- 0	3½
Veal, 24 to 30 <i>quartos</i> per lb. - - - -	27	- 0	6½
Mutton, 15 <i>quartos</i> per lb. - - - -	15	- 0	3½
Fresh pork, 15, 17, to 20 <i>quartos</i> per lb. - - - -	17	- 0	4½
Salted pork, 17 to 20 <i>quartos</i> per lb. - - - -	17	- 0	4½
Ham, 18 to 22 <i>quartos</i> per lb. - - - -	20	- 0	5
Tallow candles, 15 <i>quartos</i> per lb. - - - -	15	- 0	3½
Soap, 16 <i>quartos</i> per lb. - - - -	16	- 0	4
Butter (Mantica de Flandes), 8 <i>reals</i> per lb. - - - -	8 <i>reals</i> .	- 2	8
Goat's milk, 6 to 7 <i>quartos</i> per <i>el quarto</i> , - - - -	7 <i>quartos</i> .	- 0	1½
Mancha cheese, 18 <i>quartos</i> per lb. - - - -	18	- 0	4½
Turkey, 12, 20, to 45 <i>reals</i> a piece, - - - -	25 <i>reals</i> .	- 8	4
Fowl, 8, 11, to 14 <i>reals</i> a piece, - - - -	11	- 3	8
Hare, 5 to 9 <i>reals</i> a piece, - - - -	7	- 2	8
Rabbit, 5 to 8 <i>reals</i> a piece, - - - -	6	- 2	0
Partridge, 4 to 8 <i>reals</i> a piece, - - - -	6	- 2	0
Pigeons, 5 to 6 <i>reals</i> a piece, - - - -	5	- 1	8
Eggs, 21 to 42 <i>quartos</i> a dozen, - - - -	31 <i>quartos</i> .	- 0	7½
Potatoes, 4 to 6 <i>quartos</i> per lb. - - - -	5	- 0	1½
Garvanzos (large pease), 10 to 12 <i>quartos</i> per lb. - - - -	11	- 0	2½
Wheat flour, 13 <i>quartos</i> per lb. - - - -	13	- 0	3½
Rice, 11 to 12 <i>quartos</i> per lb. - - - -	11	- 0	2½
Brandy, 2 <i>reals</i> per <i>el quarto</i> , - - - -	—	- 0	8
Common wine, 26 to 28 <i>r.</i> the <i>arroba</i> (about 18 bottles), 27 <i>reals</i> . - - - -	—	- 9	0
Valdefunas wine, 36 <i>reals</i> per <i>el quarto</i> , - - - -	—	- 12	0
Charcoal, 4 <i>reals</i> and 5 <i>quartos</i> the <i>arroba</i> , - - - -	—	- 1	5½
Wood, 3 <i>reals</i> the <i>arroba</i> , - - - -	—	- 1	0
Common bread, 6 <i>quartos</i> per lb. - - - -	—	- 0	1½
Pan candial, 6 <i>quartos</i> per lb. - - - -	—	- 0	1½
Common oil, 15 <i>quartos</i> per lb. - - - -	—	- 0	3½
Valencia oil, 4 <i>reals</i> per lb. - - - -	—	- 1	4
French oil, 7 <i>reals</i> per lb. - - - -	—	- 2	4
Coffee, 34 <i>quartos</i> per lb. - - - -	—	- 0	8½
Sugar, 30 to 38 <i>reals</i> per lb. - - - -	34 <i>reals</i> .	- 11	4
Chocolate, 6, 8, to 10 <i>reals</i> per lb. - - - -	8	- 2	8
Tea, 11 <i>quartos</i> per oz. - - - -	—	- 0	2½
Hair-powder, 2 <i>reals</i> per lb. - - - -	—	- 0	8

MAJORCA.

M A J O R C A.

SOME circumstances relating to this island, which I procured from good authority at Barcelona, and at Bayonne, from Spaniards who had resided many years in it, I think too interesting to be omitted, as they may serve, if for no other purpose, at least, to point the inquiries of some future traveller, who shall have an opportunity of visiting that island.

Climate.

The most delicious that has been experienced by various persons well acquainted with France, Italy, Spain, and Portugal; and resulting in a good measure from the variety of the face of the country, which rises from some beautiful plains to gentle slopes, which, after many undulations of surface, finish in the mountains. In the greatest heats of July and August, the hills preserve the temperature almost vernal: nor are the heats ever suffocating in any part. The winters, except on the highest parts of the mountains, are mild and pleasant, as may be gathered from circumstances of vegetation, almonds blossom in December, are in full bloom in January; and many wild flowers are in all their beauty quite through the year. Spinnage, green pease, beans, lettuce, endive, cellery, &c. are in perfection the year round. In the depth of winter, ice is seen to the thickness of one-tenth of an inch, but melts before the day is much advanced. No sharp cutting winds are ever felt, either in winter or in spring; and a person who resided there sixteen years, never saw a fog. The houses have no chimnies; but when artificial warmth is wanted, almond-shells are burnt in *brasieres*. This extremely agreeable temperature of the climate, was confirmed to me by General Murray and his Lady, who resided there many years; and the former mentioned a circumstance, which shews how erroneous it would be to judge of any climate by the latitude; Leghorn is nearly in the same parallel, but the severest cold he ever felt, in March, was at that place, where, in washing, the water became ice before a towel could be well dipped in it.

Culture and Products.

The hills are formed into terraces, and planted and cultivated with great attention. Olives are planted, and under them wheat sown; in the flats, many almonds and mulberries. Oranges and lemons are in such quantities, that they export many to France. They are in great profusion, and the most beautiful

to

to be imagined. The mountains of Soleya are famous for peaches, and all sorts of fruit. Hedges of pomegranates are attended with medlar and quince trees, alternately on one side, and on the other mulberries; but the best fence is the prickly pear, the fruit of which is ripe in July, which is eaten, both leaf and fruit, by cattle, and are supported on it in fine order, when other things fail in the heat. Musk and water melons are in great perfection.

Sugar-canes do well; but no such thing as rice, as neither swamp, marsh, nor bog.

Irrigation is well understood, and much practised.

A common course of crops,

1. Wheat.
2. Barley.
3. Beans.
4. Pease.

Capers (which are a weed), come up in the wheat stubbles, which give a crop; then the stubble and caper-bushes are burnt, and the barley and legumes succeed, and after those artichokes.

They plough with a pair of oxen, or mules.

The proprietors in general keep the land in their own hands.

Living.

This island, which, by every account, might be made a paradise, is one of the cheapest spots in Europe to live in; upon an income of 150l. a year sterling, men of the better sort live very comfortably, and bring up a family. Every vegetable production for the table, with all kinds of fruits, are not only in uncommon profusion, but excellent of their sorts. Poultry no where better; turkies are kept in great droves, and driven to feed on berries, as regularly as sheep to pasture; they are fattened on myrtle-berries, and are not only of a delicious flavour, but a great size, even to 36 lb. weight. Mutton is excellent; some sheep are so small from the island of Yuvica, that three legs are sometimes served up in one dish.

All these circumstances united, seem to point out this island as an excellent winter residence for those who can no longer resort to Nice or Hyeres, and is probably a better climate than either of them.

Produce

Produce of the Island of Majorca in 1786.

				English Money.		
		Pesos.		£.	s.	d.
Wheat,	475,336 <i>fanegas</i>	-	1,521,075	-	342,241	17 6
Barley,	152,880	-	300,664	-	67,649	8 0
Oats,	122,068	-	134,274	-	30,211	13 0
Pulse,	102,037	-	244,888	-	55,099	16 0
Almonds,	60,500	-	129,066	-	29,039	17 0
Oil,	193,030 <i>arrobas</i>	-	476,140	-	107,131	10 0
Wine,	1,665,660	-	322,829	-	72,636	10 6
Hemp,	24,446	-	83,180	-	18,715	10 0
Flax,	5,038	-	15,367	-	3,457	11 6
Carobs,	500,000	-	83,333	-	18,749	18 6
Figs,	175,000	-	62,000	-	13,950	0 0
Cheese,	-	-	25,000	-	56,250	0 0
Wool, 472,795 lb.	-	-	61,341	-	13,801	14 6
Straw of wheat and barley,	-	-	125,045	-	28,135	2 6
Silk, 5,347 lb.	-	-	24,061	-	5,413	14 6
Sweet oranges,	-	-	45,000	-	10,125	0 0
Fruits of all sorts,	-	-	170,000	-	33,250	0 0
Pimienta,	-	-	13,000	-	2,925	0 0
Capers,	-	-	4,500	-	1,012	10 0
Increase of sheep, by birth,	-	-	126,942	-	28,561	19 0
—— of goats,	-	-	31,430	-	7,071	15 0
—— of black cattle,	-	-	25,704	-	5,783	8 0
—— of hogs,	-	-	240,000	-	54,000	0 0
—— of horses, mules, and asses,	-	-	74,100	-	16,672	10 0

Many articles are not mentioned in this account, and are reckoned to amount (the specified produce comprised) to

4,983,326 - 1,121,248 7 0

The extent of Majorca is $123\frac{1}{2}$ square leagues, whereof twenty to one degree.

Majorca is reckoned to be the $\frac{1}{171}$ part of the continent of Spain; and the whole of Spain does not amount to 250,000,000 *pesos* per annum, according to the opinion of many well-informed Spaniards.

Majorca.
316,011 3 0
Spain.
55,933,988 17 0

18 AU 65

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